UPDATE:

INITIATIVES IN

THE FIELD OF BIOMASS AND BIOENERGY CERTIFICATION

Background document from: Dam et al (2010), from the global efforts on certification of bioenergy towards an integrated approach based on sustainable land use planning

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INTRODUCTION 6

EUROPEAN COMMISSION AND PARLIAMENT (BIOMASS AND BIOENERGY).....7

INTER-AMERICAN DEVELOPMENT BANK IDB (BIOFUELS) 10

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (BIOENERGY)..... 14

SOCIAL ACCOUNTABILITY INTERNATIONAL SAI (SOCIAL CONDITIONS)..... 16

ETI BASE CODE (SOCIAL CONDITIONS)..... 19

FLO: FAIR-TRADE LABELLING ORGANISATIONS INTERNATIONAL (SOCIAL CONDITIONS) 21

EUROPEAN COMMITTEE FOR STANDARDIZATION (BIOMASS FOR ENERGY) 32

UN-ENERGY (BIOENERGY) 33

UNEP (BIOENERGY)..... 35

GLOBAL BIOENERGY PARTNERSHIP GBEP (BIOENERGY) 36

RSPO, ROUNDTABLE ON SUSTAINABLE PALM OIL (COMMODITY)..... 39

RTRS, ROUNDTABLE ON RESPONSIBLE SOY (COMMODITY)..... 47

BETTER SUGARCANE INITIATIVE LTD (COMMODITY)..... 53

CCCC/4C COMMON CODE FOR THE COFFEE COMMUNITY (COMMODITY)..... 58

ROUNDTABLE ON SUSTAINABLE BIOFUELS RSB (BIOFUELS) 60

GLOBALGAP – FORMER EUREPGAP (AGRICULTURAL PRODUCTS) 76

SUSTAINABLE AGRICULTURE NETWORK / RAINFOREST ALLIANCE (CROPS) 84

RAINFOREST ALLIANCE CERTIFIED (FORESTRY)..... 94

CCBS: COMMUNITY AND BIODIVERSITY STANDARDS 100

FSC: FOREST STEWARDSHIP COUNCIL (FOREST) 109

PEFC: PROGRAM FOR ENDORSEMENT OF FOREST CERTIFICATION (FOREST) 116

MCPFE: PAN EUROPEAN CRITERIA FOR SFM (FOREST) 119

ITTO AND ATO/ITTO (TROPICAL FOREST) 122

SUSTAINABLE FORESTRY INITIATIVE SFI (FOREST) 129

ATFS - AMERICAN TREE FARM SYSTEM (FOREST) 137

CANADIAN STANDARDS ASSOCIATION CSA (FOREST)..... 141

CERFLOR SCHEME - BRAZIL (FOREST) 146

LEMBAGA EKOLABEL INDONESIA LEI (FOREST) 154

PAN AFRICAN FOREST CERTIFICATION SCHEME PAFC (FOREST)..... 159

CERTFOR CHILE (FOREST)..... 165

MTCC: MALAYSIAN TIMBER CERTIFICATION COUNCIL (FOREST)..... 170

AUSTRALIAN FORESTRY CERTIFICATION STANDARD AFCS (FOREST)..... 179

FINNISH FOREST CERTIFICATION SYSTEM FFCS (FORESTRY) 186

IFOAM: INTERNATIONAL FEDERATION OF ORGANIC AGRICULTURE MOVEMENTS (ORGANIC AGRICULTURE, UMBRELLA ORGANIZATION)..... 194

BIO: ORGANIC FARMING – EC CONTROL SYSTEM (ORGANIC AGRICULTURE) 202

* RULES FOR SEAWEED, LIVESTOCK, AQUACULTURE AND RULES FOR PRODUCTS AND SUBSTANCES USED IN FARMING AND FOR CONVERSION ARE NOT INCLUDED IN THIS LIST. 203

LIST OF CRITERIA AND INDICATORS (NOTE: CRITERIA SPECIFIED TO LIVESTOCK AND AQUATIC ANIMALS ARE NOT SHOWN IN TABLE) [116]:..... 204

NATURLAND (ORGANIC AGRICULTURE) 206

LEAF ASSURANCE SCHEME (CROPS)..... 213

LIST OF CRITERIA AND INDICATORS [125] 215

ASSURED COMBINABLE CROPS SCHEME (AGRICULTURE) 220

NETHERLANDS GOVERNMENT (BIOMASS FOR ENERGY) 227

GERMAN BIOMASS SUSTAINABILITY ORDINANCE (BIOENERGY) 237

UNITED KINGDOM – RTFO (BIOFUELS) 240

SWITZERLAND – GOVERNMENT (BIOFUELS) 247

BELGIUM (BIOENERGY –POWER AND BIOFUELS) 249

INDIA – NATIONAL BIOFUELS POLICY (BIOFUELS) 251

JAPAN – BIOMASS MARK LABEL (BIOMASS) 252

NEW ZEALAND – BIOFUELS SALES OBLIGATION (BIOFUELS) 253

USA ON NATIONAL LEVEL: RFS (BIOFUELS) 254

USA: LCFS CALIFORNIA (BIOFUELS) 257

USA: STATE MASSACHUSETTS (BIOFUELS) 258

ECOLOGO LABEL / ENVIRONMENTAL CHOICE (BIOMASS FOR ELECTRICITY) 259

BRAZIL: SOCIAL FUEL SEAL (BIOFUEL) 262

GREEN GOLD LABEL GGL (BIOMASS FOR ELECTRICITY) 263

INTERNATIONAL SUSTAINABILITY AND CARBON CERTIFICATION ISCC (BIOFUELS) 269

GSL: GRÜNER STROM LABEL (BIOMASS FOR ELECTRICITY) 273

OK POWER (BIOMASS FOR ELECTRICITY) 274

GREEN-E (BIOMASS FOR ELECTRICITY) 275

SWITZERLAND: NATUREMADE LABEL (BIOMASS FOR ELECTRICITY) 278

SEKAB (BIOMASS FOR BIOFUELS) 282

GREENERGY (BIOMASS FOR BIOFUELS) 286

SWAN LABEL (BIOFUELS AND BIOFUEL PELLETS) 296

DRAX POWER LIMITED (BIOMASS) 303

STAR – ETHA STAR AND FAME STAR 304

LBE - LABORELEC (BIOMASS FOR ELECTRICITY) 306

CO2 STAR LABEL (BIOFUEL) 308

SUSTAINABLE BIODIESEL ALLIANCE USA (BIOFUELS) 309

THE COUNCIL ON SUSTAINABLE BIOMASS PRODUCTION CSBP (BIOMASS FOR BIOENERGY) 315

WWF 316

NATIONAL BIODIESEL BOARD (NBB) IN US (BIOFUELS) 319

CORPORATE EUROPE OBSERVATORY CEO (REPORT) (BIOFUELS) 320

INTRODUCTION

This background document is prepared in the frame of IEA Bioenergy Task 40 on sustainable international bioenergy trade and includes an overview and update on relevant certification initiatives and systems for biomass and bioenergy certification, based on the year of 2009.

Users of this background document should take the following into consideration:

- Certification standards and initiatives are continuously updated and reviewed. This document aims to give a state of the art overview for the year 2009.

- This background document provides an overview of initiatives and principles, criteria and indicators developed. Most standards provide additional documentation (guidelines, definitions) that supports the interpretation of these principles and criteria. Full interpretation of the standards cannot be done without reading these documents.

- While the authors did their best to compile and verify all information presented in this paper, no guarantee of completeness and correctness of all information presented can be given.

- We welcome updates and comments on this background document.

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European Commission and Parliament (biomass and bioenergy)

General characteristics:	
Status:	Theoretical development
Geographical coverage:	International *Countries included*
Scope:	Biofuels and other bioliquids (liquid fuel for energy purposes produced from biomass). The requirements for a sustainability scheme for energy uses of biomass, other than bioliquids and biofuels, should be analyzed by the Commission by 2010.
Initiator system:	European Commission, Council and Parliament

Short summary system or initiative:	Extension system:	
The environmental sustainability criteria apply to bioliquids in general. Biofuels and other bioliquids that do not fulfill the environmental sustainability criteria are not taken into account for the mandatory targets to be achieved in 2020 (see below).	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Some
Context:		
Mandatory targets for an overall share of 20% renewable energy and a 10% share of renewable energy in transport in the EU's consumption in 2020, translated into individual targets for member states (national action plans).		
Status of system:		
Sustainability criteria for biofuels and other bioliquids are developed [1].		
Planned activities:		
It is expected that the sustainability criteria for biofuels and other bioliquids will go in implementation from 2011 onwards. Guidelines on reporting requirements are under development [1]. The requirement for a sustainability standard for solid biomass is under discussion at the EC. The most recent Communication does not at this stage propose binding criteria at EU level, mentioning that MS that have, or who will introduce, national sustainability standards should ensure that these in almost all respects (exceptions are indicated) should be the same as laid down in the EC-RED [2]. The Benelux countries have reacted in a Communication that the absence of a Commission proposal in this regard is seen as a missed opportunity [3].		

Structure system or initiative:	
Juridical basis	Legal basis
Participation:	
Local stakeholder involvement	-
Monitoring performance:	The Commission monitors the origin of biofuels and other bioliquids based on the reports from member states. The Commission shall also monitor the commodity food price changes associated with the use of biomass for energy and any associated negative and positive effects on food security. Also a.o. the Commission will analyze the impact of EU biofuel policy on the availability of foodstuffs in exporting countries, the ability of people in developing countries to afford these foodstuffs and wider development issues [1]. The member states report to the Commission on progress in the promotion and use of energy from renewable energy sources by June 2011 at the latest, and every 2 years thereafter. The reporting includes a.o. [1]: i) commodity price and land use changes within the member state associated with its increased use of biomass and other forms of energy from renewable sources; ii) the development and share of biofuels made from waste, residues, non-food cellulosic material and lignocellulosic material; iii) the estimated impact of biofuel production on biodiversity, water resources, water quality and soil; iv) the estimated net greenhouse gas savings due to the use of energy from renewable sources.
Chain of custody system	The mass balance should be used to verify compliance providing the following: i) consignments of raw material or biofuel with differing sustainability characteristics

	can be mixed; ii) Information about the sustainability characteristics and sizes of the consignments (see i) remains assigned to the mixture; iii) the sum of all consignments withdrawn from the mixture is described as having the same sustainability characteristics, in the same quantities, as the sum of all consignments added to the mixture. The Commission reports in 2010 and 2012 on the operation of the mass balance method. The Commission shall consider those verification methods in which information about sustainability characteristics needs not remain physically assigned. The auditing will be independent, verifying that the system used is accurate, reliable and fraud resistant. The Commission may decide that bilateral and multilateral agreements between the EU and third countries demonstrate that bioliquids cultivated in those countries comply with the environmental sustainability criteria. The Commission may decide that voluntary national or international schemes setting standards for the production of biomass contain accurate data or demonstrate that consignments of biofuel comply with the environmental sustainability criteria [1].
Level of detail CoC system:	An obligatory system of guarantees of origin for heating or cooling (limited to plants of at least 5 MW). A guarantee of origin is defined as: an electronic document which has the function of providing proof that a given quantity of energy was produced from renewable sources. This guarantee of origin shall be of a standard size of 1 MW and shall specify a.o. the energy source [1].

Further information on:	
Removal of trade barriers	National certification schemes should be mutually recognized by member states and should be based on minimum harmonized principles [1].
Costs and subsidies	EC states that market actors will only change behavior if biofuels and bioliquids meeting the criteria command a price premium compared to those that do not. Member states may encourage the use of biofuels which give additional benefits (e.g. incl. the benefits of diversification offered by biofuels from wastes, lignocellulosic material) by taking due account of the different costs of traditional biofuels on one hand and those that need additional development. Member states may encourage investment in the development of renewable energy technologies that need time to become competitive [1].
Specification costs for certification	

List of principles included [1]:	
1.	Conversion of high carbon-stock land that in hindsight would prove not to be eligible for producing raw materials for bioliquids, should not be converted.
2	Biofuels and other bioliquids shall not be made from raw material obtained from land with a high biodiversity value.
3	Biofuels and other bioliquids made from raw materials in the EU should comply with EU environmental requirements for agriculture.
4	The GHG emission saving from the use of biofuels and other bioliquids shall be at least 35%

List of criteria and indicators EC:

Criteria:	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
1a. Wetlands and continuously forested areas should not be converted to land for the production of bioliquids. This is land which had this status in January 2008 and no longer has this status [1].	Wetlands: land that is covered with or saturated by water permanently or for a significant part of the year, incl. pristine peat land. Continuously forested areas: land spanning more than 1 ha with trees higher than 5 meters and a canopy cover of more than 30%, or trees able to reach these thresholds in situ [1].		
2a. Bio-diverse forest where there has been no significant human intervention or where the last significant human intervention was sufficiently long ago to have allowed the species composition and processes to become re-established., should not be converted to land for biofuels or bioliquids, based on the status in or after January 2008, whether or not the land still has this status [1].			Following the definition of FAO and UNECE and the Ministerial Conference on the Protection of forests in Europe [1].
2b. Areas designated for nature purposes, unless evidence is provided that the production of raw materials did not interfere with these purposes, should not be converted to land for biofuels or bioliquids, based on the status in or after January 2008, whether or not the land still has this status [1].			Following the definition of FAO and UNECE and the Ministerial Conference on the Protection of forests in Europe [1].
2c. Biofuels made from raw materials originating from certain high biodiverse grasslands should not qualify for the incentives provided for this Directive, based on the status in or after January 2008, whether or not the land still has this status [1].	High biodiverse grasslands is to stay grassland that is species-rich, not fertilized and not degraded [1].	The European Commission is to establish appropriate criteria and geographic ranges to define such highly biodiverse grasslands [1].	
3. Agricultural raw materials are obtained in accordance with the requirements and standards under the i) provisions listed in point A of Annex III to Council regulation (1782/2003, environment) and ii) the minimum requirements for good agricultural and environmental condition defined pursuant to article 5(1) of that Regulation [1].			
4. At least 35% GHG emission reduction compared to reference fuel [1]. Rising to 50% on January 2017 to 60% in 2018 for biofuels and bioliquids produced in installations in which production started on or after January 2017.		It is necessary to lay down clear rules for the calculation of GHG emissions from biofuels and other bioliquids and their fossil fuel comparators (see technical report). [1].	The commission may decide that national, multinational or international schemes to measure GHG savings contain accurate data [1].

Inter-American Development Bank IDB (biofuels)

General characteristics:	
Status:	In Implementation - Available on IDB website http://www.iadb.org/scorecard/
Geographical coverage:	International
Scope:	Biofuels
Initiator system:	The Sustainable Energy and Climate Change Initiative (SECCI) and the Structured and Corporate Finance Department (SCF) of the Inter-American Development Bank (IDB) have created a Biofuels Sustainability Scorecard based on sustainability criteria of RSB [4].

Short summary system or initiative:	Extension system:	
The primary objective of the Scorecard is to encourage higher levels of sustainability in biofuels projects by providing a tool to think through the range of complex issues associated with biofuels. The Scorecard has been designed to be used at multiple stages of project lifecycle [4].	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Y (sometimes not clearly)

Context:

The Sustainable Energy and Climate Change Initiative (SECCI) is approved by the IDB Board in March 2007 and is a response to the request from Latin American Countries (LAC) for an expanded role in sustainable energy and climate change in LAC. The biofuel objectives from SECCI are [5]:

- Assess the economic viability of biofuels and bioenergy development.
- Provide sustainability assessment to mitigate potential adverse social and environmental impacts.
- Assist Latin America and the Caribbean in becoming a leader in "climate friendly" biofuels production by increasing research and expertise in second generation biofuels.
- Provide country-level policy assistance in support of biofuel development.
- Finance sustainable biofuel and bioenergy programs, including feedstock development, production facilities, and related infrastructure

The IDB supporting investment in sustainable biofuels includes a Biofuels action plans and technical cooperation, partnership with the Roundtable on Sustainable Biofuels, a creation of environmental and social guidelines for biofuels projects, a biofuels Sustainability Scorecard for assessing biofuels projects, an external relation strategy for biofuels and the financing of biofuels projects.

Status of system:

The Scorecard should be seen as a work-in-process and will continue to be updated.

Planned activities:

-

Structure system or initiative:	
Juridical basis:	Voluntary
Participation:	The Scorecard has been designed specifically for the private sector at the project level, but could be used more broadly as a thinking tool for which criteria need to be assessed in biofuels development [4].
Local stakeholder involvement	Consultation required in criterion 6e [4].
Monitoring performance:	-
Chain of custody system	-
Level of detail CoC system:	Not applicable

Further information on:	
Removal of trade barriers	-
Costs:	-

List of principles included [4]:	
1	Environmental principle - general
2	Environmental principle - cultivation
3	Environmental principle – production
4	Environmental principle – transversal
5	Environmental principle – transportation
6	Social principle

List of criteria and indicators [4]:

Criteria	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
1a. Yield (liters of biofuel per hectare).	Yield ≥ 6000: Excellent 4000 ≤ Yield < 6000: Good 1000 ≤ Yield < 4000: Satisfactory Yield < 1000: Potential risk	Yield must be calculated for the project, not estimated based on typical feedstock yields.	
1b. Relative yield performance	Excellent: Performance ≥ 10% greater than Average Good: Average ≤ Performance < 10% greater than average Satisfactory: 10% less than Average ≤ Performance < Average Potential risk: Performance < 10% less than average	This category seeks to indicate how the given feedstock in the project performs in terms of yield (liters of biofuel per hectare) compared to the average yield usually expected for this specific type of feedstock. This category is expressed in percentage.	
1c. Biodiversity	Excellent: Assessment conducted, no threatened species Satisfactory: No assessment required given prior land use Potential risk: Threatened species adequately addressed Unsatisfactory: Threatened species, no plan	This category seeks to address the impact of a project on the biodiversity of the area where it will be located. No assessment required given prior land use: the land was previously used for agriculture or similar activity, and therefore no biodiversity assessment is required.	
2a. Former land use - cultivation	No land area required: Excellent Degraded land: Good Marginal land: Good Under-utilized land: Satisfactory Fallow fertile land: Satisfactory Productive land: Potential risk Rain forest or primary forest: Not satisfactory Peat land: Not satisfactory Wetlands: Not satisfactory HCV areas and protected area: Not satisfactory	Choice of type of land applies to status as of 2005. Percentages should be measured on a per hectare basis.	Definitions on land-uses are provided.
2b. Crop lifecycle (distributed in % over various crops)	Permanent crop, no till: Excellent Permanent crop, low till: Excellent Multi-year crop, no till: Excellent Permanent crop, tilling: Good Multi-year crop, low till: Good Annual crop, no till: Good Multi-year crop, tilling: Satisfactory Annual crop, low till: Satisfactory Annual crop, tilling: Potential risk		
2c. Crop rotation / crop mix (distributed in % over various crops)	Crop rotation and inter-cropping: Excellent Crop rotation: Good Inter-cropping: Good No crop rotation or inter-cropping: Satisfactory		
2d. Harvesting method (distributed in % over various crops)	Manual harvesting (feedstock other than sugarcane): Excellent Mechanical harvesting: Good Field burning with manual harvesting: Satisfactory Field burning when mechanical harvesting feasible: Potential risk		
2e. Water requirements for cultivation	No irrigation required: Excellent Rain-fed: Excellent Efficient irrigation: Good Standard irrigation: Satisfactory Irrigation in water scarce region: Potential risk Water scarcity caused by project: Unsatisfactory	Refer to the IDB Water Requirement Calculator to facilitate measurement and adequate use of percentages. Percentage calculated by number of hectares and number of cultivation months	

2f. Fertilizer use	Efficient use of organic fertilizers: Good Organic fertilizers: Satisfactory Efficient use of non-organic fertilizers: Satisfactory Non-organic fertilizers: Potential risk		
2g. Pesticide use	No pesticides: Excellent Efficient use of organic pesticides: Excellent Organic pesticides: Good Efficient use of non-organic pesticides: Satisfactory Non-organic pesticides: Potential risk Internationally restricted pesticides: Unsatisfactory		
3a. Energy source for facility	Cogeneration with excess to sell to grid: Excellent Cogeneration to power facility only: Good Other renewables: Good Grid: Satisfactory Off-grid fossil fuel: Potential risk	This category seeks to address greenhouse gas emissions, as well as the ratio of energy return on energy input of the production phase of biofuel projects. Percentages should be measured on a kW/h basis.	
3b. Water requirements used for production	No water used in production: Excellent Wastewater used in production: Good Partial use of wastewater in production: Satisfactory No use of wastewater in production: Potential risk		
3c. Waste disposal	Reduce, reuse, recycle: Excellent Meets international standards: Good Meets national regulations: Satisfactory Project directly violates national standards: Not satisfactory Wastewater from project causing groundwater pollution: Not satisfactory		
3d. Co-product use	Preeminent use: Good Partial use: Satisfactory No use: Potential risk		
4a. Energy balance	Energy balance ≥ 6: Excellent 4 ≤ Energy balance < 6: Good 1 ≤ Energy balance < 4: Satisfactory Energy balance < 1: Not satisfactory	This category seeks to address the ratio between the energy produced by 1 kg of the biofuel and the total energy necessary to cultivate, produce, and distribute it. Energy balance should be calculated with project specific information, not estimated based on global averages.	
4b. GHG emissions	Savings ≥ 60%: Excellent 35% ≤ Savings < 60%: Good 0% ≤ Savings < 35%: Satisfactory Savings < 0: Not satisfactory	This category provides a measurement of the direct and indirect GHG savings resulting from the production of a biofuel project, taking into account the entire lifecycle of biofuel production, from feedstock cultivation to the end-use. The lifecycle analysis includes the construction of the facility. The savings is calculated against the gasoline baseline. Note that there is currently no internationally approved methodology to calculate lifecycle GHG emissions from biofuels development.	
5a. Relative energy efficiency of transport and distribution	Lower third ratio: Good Mid third ratio: Satisfactory Upper third ratio: Potential risk	This indicator can be measured by calculating the ratio between the energy used in transporting the biofuel and the energy content of the biofuel transported. Refer to the IDB Distribution Efficiency Calculator to facilitate measurement.	
6a. Human and labor rights	Exceeds national average conditions: Excellent Meets national standards: Good Informal employment: Potential risk Violation of human rights: Not satisfactory		
6b. Land ownership	Community-based / co-op: Excellent Community involvement as shareholders: Good		

	Community leasing of the land: Good Concentrated ownership: Satisfactory Displacement with proper compensation: Potential risk Disputed land: Potential risk Involuntary displacement: Not satisfactory Involuntary displacement from indigenous territory: Not satisfactory		
6c. Use of best available technique	Yes: Excellent No: Satisfactory		
6d. Poverty reduction	High: Excellent Medium: Good Low: Satisfactory		
6e. Consultation	Conducted full ESIA, full transparency: Excellent Free, prior, and informed consent from community: Satisfactory No consultation: Not satisfactory		

International Organization for Standardization (bioenergy)

General characteristics:	
Status:	Proposal
Geographical coverage:	International
Scope:	Bioenergy
Initiator system:	ISO (International Organization for Standardization) is a network of the national standards institutes of 157 countries and is the world's largest developer and publisher of International Standards. The ISO national member bodies from Brazil (the Associação Brasileira de Normas Técnicas ABNT) and Germany (the Deutsches Institut für Normung DIN) have proposed a new ISO work item proposal on "Sustainability criteria for biofuel" (later changed into bioenergy). This document addresses standardization in the field of sustainability criteria, as well as the assessment of these criteria for the production, supply chain, and application of biofuels [6].

Short summary system or initiative:	Extension system:	
A preliminary meeting in June 2009 on "Sustainability criteria for bioenergy" recommends to ISO/TMB to formally establish a new ISO/PC with the following scope [7]: "Standardization in the field of sustainability criteria for production, supply chain and application of bioenergy. This includes terminology and aspects related to the sustainability (e.g. environmental, social and economic) of bioenergy [7]."	Principles included:	N
	Criteria included:	N
	Indicators included:	N

Context:
• According to these ISO national member bodies, the work efforts of the ISO Technical Committee (TC) 28, Subcommittee (SC) 7, Liquid Biofuels, and of ISO TC 238, Solid Biofuels, are focused on quality requirements, and do not address the sustainability aspects of biomass and biofuel production. Citing the demonstrated worldwide interest in biomass as an alternative energy resource [6]. • ISO has defined and provided best practice guidance for implementing labeling schemes (ISO/IEC Guide 59, 1994) [8].
Status of system:
The proposal from ABNT and DIN and ANSI seeks to establish a new Project Committee (PC) that would validate and legitimize global biofuel production, ensuring that the industry follows practices that are neither environmentally destructive nor socially aggressive. Specifically, the PC would establish terminology and general characteristics for both the environmental aspects and social aspects of biofuel production [6]. A preliminary meeting in June 2009 on "Sustainability criteria for bioenergy" recommends to ISO/TMB to formally establish a new ISO/PC [7]. ISO/PC on Sustainability criteria for bioenergy recommends the following aspects be addressed in future work [7]: • Inventory of initiatives; • Terminology; • Greenhouse gases; • Environmental aspects; • Social aspects; • Economic aspects; • Verification and auditing; • Indirect effects. ISO/PC on Sustainability criteria for bio-energy recommends that coordination and liaisons are sought with relevant ISO committees such as ISO/CASCO; ISO/TMB WG on Social responsibility; ISO/TC 28/SC 7; ISO/TC 34; ISO/TC 207; ISO/TC 207/SC 7; ISO/TC 238 [7].
Planned activities:
ISO/PC on Sustainability criteria for bioenergy recommends that the first meeting takes place in Rio de Janeiro, Brazil, from 21st to 23rd, October, 2009 [7].

Structure system or initiative:	
Participation:	
Local stakeholder involvement	
Monitoring performance:	
Chain of custody system	
Level of detail CoC system:	

Further information on:	
Removal of trade barriers	
Costs:	

List of ISO Guidelines relevant to certification schemes:	
Guide 59	Code of Good Practice for Standardization. This includes the minimum requirements expected of a standards-setting body. Includes requirements for standard-setting procedures, transparency, approval of standards, participation and complaints during standard setting [9].
Guide 61	Accreditation bodies (an authoritative party gives formal recognition that an independent 3rd party is competent to carry out certification): General requirements for assessment and accreditation of certification / registration bodies [9].
Guide 62	For certification bodies (authoritative body gives a.o. formal recognition that an independent party is competent to carry out certification): General requirements for bodies operating assessment and certification / registration of quality systems [9].
Guide 65	For certification bodies: General requirements for bodies operating product certification systems [9].
Guide 66	For certification bodies: General requirements for bodies operating assessment and certification / registration of environmental management systems [9].
19011	General criteria for Quality Management System Auditors or Environmental Management System Auditors

Social Accountability International SAI (social conditions)

General characteristics:	
Status:	In implementation
Geographical coverage:	International
Scope:	Working conditions
Initiator system:	

Short summary system or initiative:	Extension system:	
Social Accountability International 8000. Social accountability 8000 (SA8000) from SAI is a social standard [8]. SA8000 is an international standard for improving working conditions.	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Guidelines
Context:		
It is based on the principles of thirteen international human rights conventions, ten of which are conventions of the International Labour Organization (ILO) [10].		
Status of system:		
In implementation		
Planned activities:		
The Guidance Document was last revised and published in 2004. SAI is currently working on the revision of this document so as to bring it inline with the changes made in the SA8000:2008 standard. A new Guidance Document is expected to be released at the end of 2010 [11].		

Structure system or initiative:	
Juridical basis:	Voluntary
Participation:	Developed with relevant stakeholders
Local stakeholder involvement	Auditor(s) are required to meet on a regular basis with key interested parties to anticipate problem areas. The interested stakeholders to be consulted include: workers, trade unions, NGOs, community organizations, and labor experts. The groups being consulted may be asked if any facility in the area has particular problems and/or for comments on a list of facilities including the audited facility, but auditors should not identify the applicant facility prior to certification [10].
Monitoring performance:	Intern monitoring program required. Certification lasts for three years, with surveillance audits required every six months. If problems are found during a surveillance audit or a complaint is received, auditors may need to return sooner [10].
Chain of custody system	Not available
Level of detail CoC system:	Has rigorous auditor accreditation process and auditor competency requirements are clear and appropriate. Allows surveillance audits between full audits [8]. Third party assessment of compliance to SA8000 standards is available through SAI-accredited, independent organizations [10]. This process includes documentation, site audits, and observation of auditors in the field. Guidelines for auditing are provided
Further information on:	
Removal of trade barriers	
Costs:	Audit costs $650-$2,000 per day dependant on size & type of operation and certification body [8].

List of principles included:	
1	Child labour
2	Forced labour
3	Health and safety
4	Freedom of association and the right of collective bargaining
5	Discrimination
6	Disciplinary practices
7	Working hours
8	Remuneration
9	Management systems

List of criteria and indicators [10]:

Criteria	Indicator	Methodology used	Databases used:
• 1.1 The company shall not engage in or support the use of child labor (1+2) as defined above. • 1.2 The company shall establish, document, maintain, and effectively communicate to personnel and other interested parties policies and procedures for remediation of children found to be working in situations which fit the definition of child labor above, and shall provide adequate support to enable such children to attend and remain in school until no longer a child • 1.3 The company shall establish, document, maintain, and effectively communicate to personnel and other interested parties policies and procedures for promotion of education for children covered under ILO recommendation 146 and young workers who are subject to local compulsory education laws or are attending school, including means to ensure that no such child or young worker is employed during school hours and that combined hours of daily transportation, school, and work time does not exceed 10 hours a day. • 1.4 The company shall not expose children or young workers to situations in or outside of the workplace that are hazardous, unsafe or unhealthy.	Guidelines provided		
• 2.1 The company shall not engage in or support the use of forced labor, nor shall personnel be required to lodge Ôdeposits or identity papers upon commencing employment with the company.	Guidelines provided		
• 3.1 The company, bearing in mind the prevailing knowledge of the industry and of any specific hazards, shall provide a safe and healthy working environment and shall take adequate steps to prevent accidents and injury to health arising out of, associated with or occurring in the course of work, by minimizing, so far as is reasonably predictable, the causes of hazards inherent in the working environment. • 3.2 The company shall appoint a senior management representative responsible for the health and safety of all personnel, and accountable for the implementation of the health and safety elements of this standard. • 3.3 The company shall ensure that all personnel receive regular and recorded health and safety training, and that such training is repeated for new and reassigned personnel. • 3.4 The company shall establish systems to detect, avoid or respond to potential threats to the health and safety of all personnel. • 3.5 The company shall provide, for use by all personnel, clean lavatories, access to potable water, and if appropriate, sanitary facilities for food storage. • 3.6 The company shall ensure that, if provided for personnel, dormitory facilities are clean, safe, and meet the basic needs of the personnel.	Guidelines provided		
• 4.1 The company shall respect the right of all personnel to form and join trade unions of their choice and to bargain collectively. • 4.2 The company shall, in those situations in which the right to freedom of association and collective bargaining are restricted under law, facilitate parallel means of independent and free association and bargaining for all such personnel. • 4.3 The company shall ensure representatives of such personnel are not the subject of discrimination and that such representatives have access to their members in the workplace.	Guidelines provided		
• 5.1 The company shall not engage in or support discrimination in hiring, remuneration, access to training, promotion, termination or retirement based on race, caste, national origin, religion, disability, gender, sexual orientation, union membership, political affiliation, or age. • 5.2 The company shall not interfere with the exercise of the rights of personnel to observe tenets or practices, or to meet needs relating to race, caste, national origin, religion, disability, gender, sexual orientation, union membership, or political affiliation. • 5.3 The company shall not allow behavior, including gestures, language, and physical contact, that is sexually coercive, abusive or exploitative.			
• 6.1 The company shall not engage in or support the use of corporal punishment, mental or physical coercion, and verbal abuse.			
• 7.1 The company shall comply with applicable laws and industry standards on working hours. The normal workweek shall be as defined by law but shall not on a regular basis exceed 48 hours. Personnel shall be provided with at least one day off in every seven-day period. All overtime work shall be reimbursed at a premium rate and under no circumstances shall exceed 12 hours per employee per week.			

• 7.2 Other than as permitted in Section 7.3 (below), overtime work shall be voluntary. • 7.3 Where the company is party to a collective bargaining agreement freely negotiated with worker organizations (as defined by the ILO) representing a significant portion of its workforce, it may require overtime work in accordance with such agreement to meet short-term business demand. Any such agreement must comply with the requirements of Section 7.1			
• 8.1 The company shall ensure that wages paid for a standard working week shall always meet at least legal or industry minimum standards and shall be sufficient to meet basic needs of personnel and to provide some discretionary income. • SA8000 8.2 The company shall ensure that deductions from wages are not made for disciplinary purposes, and shall ensure that wage and benefit remuneration are detailed clearly and regularly for workers; the company shall also ensure that wages and benefits are rendered either in cash or check form, in a manner convenient to workers. • SA8000 8.3 the Company shall ensure that labor-only contracting arrangements and false apprenticeship schemes are not undertaken in an effort to avoid fulfilling obligations to personnel under applicable laws pertaining to labor & social security legislation and regulations.			
• 9.1 Top management (1) shall define the company's policy for social accountability and labor conditions to ensure that it meets a set of criteria (see indicators) • 9.2 Top management shall periodically review the adequacy, suitability, and continuing effectiveness of the company's policy, procedures and performance results vis-à-vis the requirements of this standard and other requirements to which the company subscribes. System amendments and improvements shall be implemented where appropriate. • 9.3 The company shall appoint a senior management representative who, irrespective of other responsibilities, shall ensure that the requirements of this standard are met; • 9.4 The company shall provide for non-management personnel to choose a representative from their own group to facilitate communication with senior management on matters related to this standard. • 9.5 The company shall ensure that the requirements of this standard are understood and implemented at all levels of the organization; methods shall include, but are not limited to: a) clear definition of roles, responsibilities, and authority; b) training of new and/or temporary employees upon hiring; c) periodic training and awareness programs for existing employees; d) continuous monitoring of activities and results to demonstrate the effectiveness of systems implemented to meet the company's policy and the requirements of this standard. • 9.6 The company shall establish and maintain appropriate procedures to evaluate and select suppliers/subcontractors (and, where appropriate, sub-suppliers) based on their ability to meet the requirements of this standard. • 9.7 The company shall maintain appropriate records of suppliers/ subcontractors commitments to social accountability, including, but not limited to, the written commitment of those organizations • 9.8 The company shall maintain reasonable evidence that the requirements of this standard are being met by suppliers and subcontractors. • 9.9 In addition to the requirements of Sections 9.6 and 9.7 above, where the company receives, handles or promotes goods and/or services from suppliers/subcontractors or sub-suppliers who are classified as home workers, the company shall take special steps to ensure that such home workers are afforded a similar level of protection as would be afforded to directly employed personnel under the requirements of this standard. • 9.10 The company shall investigate, address, and respond to the concerns of employees and other interested parties with regard to conformance/non-conformance with the company's policy and/or the requirements of this standard; the company shall refrain from disciplining, dismissing or otherwise discriminating against any employee for providing information concerning observance of the standard. • 9.11 The company shall implement remedial and corrective action and allocate adequate resources appropriate to the nature and severity of any non-conformance identified against the company's policy and/or the requirements of the standard. *Also 9.13 and 9.14: Not included in overview*	9.1: a) includes a commitment to conform to all requirements of this standard and requirements to which the company subscribes; b) includes a commitment to comply with national and other applicable law, and to respect the international instruments listed in Section II and their interpretation; c) includes a commitment to continual improvement; d) is effectively documented, implemented, maintained, communicated and is accessible in a comprehensible form to all personnel, e) is publicly available.		

ETI Base Code (social conditions)

General characteristics:	
Status:	In implementation
Geographical coverage:	International
Scope:	Various sectors
Initiator system:	1998. Companies (e.g. Chiquita Brands, Marks and Spencer, Sainsbury, The Body Shop International), Trade Unions, NGOs [12].

Short summary system or initiative:	Extension system:	
Code of labour practice - reflecting the most relevant international standards with respect to labour practices which will be used as the basis of its work [12].	Principles included:	Y
	Criteria included:	Y
	Indicators included:	N
Context:		
The code of labour practice is based on national law and the internationally agreed labour standards of ILO [12].		
Status of system:		
In implementation		
Planned activities:		

Structure system or initiative:	
Juridical basis:	Voluntary
Participation:	Governing board is made up of equal representatives from three main categories of members: companies, trade union organizations and NGOs [12].
Local stakeholder involvement	In case of smallholder farmers is a participatory process intended [12].
Monitoring performance:	Not obvious how auditing and monitoring work [12].
Chain of custody system	Not in place
Level of detail CoC system:	Not in place

Further information on:	
Removal of trade barriers	-
Costs:	-

List of principles included [13]:	
1	Employment is freely chosen
2	Freedom of association and the right to collective bargaining are respected
3	Working conditions are safe and hygienic
4	Child labour shall not be used
5	Living wages are paid
6	Working hours are not excessive
7	No discrimination is practiced
8	Regular employment is provided
9	No harsh or inhumane treatment is allowed

List of criteria and indicators:

Criteria [13]	Indicator	Methodology used	Databases used:
Criterion 1: 1 There is no forced, bonded or involuntary prison labour. 2 Workers are not required to lodge "deposits" or their identity papers with their employer and are free to leave their employer after reasonable notice.			
Criterion 2: 1 Workers, without distinction, have the right to join or form trade unions of their own choosing and to bargain collectively. 2 The employer adopts an open attitude towards the activities of trade unions and their organizational activities. 3 Workers representatives are not discriminated against and have access to carry out their representative functions in the workplace. 4 Where the right to freedom of association and collective bargaining is restricted under law, the employer facilitates, and does not hinder, the development of parallel means for independent and free association and bargaining.			
Criterion 3: 1 A safe and hygienic working environment shall be provided, bearing in mind the prevailing knowledge of the industry and of any specific hazards. Adequate steps shall be taken to prevent accidents and injury to health arising out of, associated with, or occurring in the course of work, by minimizing, so far as is reasonably practicable, the causes of hazards inherent in the working environment. 2 Workers shall receive regular and recorded health and safety training, and such training shall be repeated for new or reassigned workers. 3 Access to clean toilet facilities and to potable water, and, if appropriate, sanitary facilities for food storage shall be provided. 4 Accommodation, where provided, shall be clean, safe, and meet the basic needs of the workers. 5 The company observing the code shall assign responsibility for health and safety to a senior management representative.			
Criterion 4: 4.1 There shall be no new recruitment of child labour. 4.2 Companies shall develop or participate in and contribute to policies and programs which provide for the transition of any child found to be performing child labour to enable her or him to attend and remain in quality education until no longer a child; “child” and “child labour” being defined in the appendices. 4.3 Children and young persons under 18 shall not be employed at night or in hazardous conditions.			
Criterion 5: 1. Wages and benefits paid for a standard working week meet, at a minimum, national legal standards or industry benchmark standards, whichever is higher. In any event wages should always be enough to meet basic needs and to provide some discretionary income. 2. All workers shall be provided with written and understandable Information about their employment conditions in respect to wages before they enter employment and about the particulars of their wages for the pay period concerned each time that they are paid. *3.* Deductions from wages as a disciplinary measure shall not be permitted nor shall any deductions from wages not provided for by national law be permitted without the expressed permission of the worker concerned. All disciplinary measures should be recorded.			
Criterion 6: 1. Working hours comply with national laws and benchmark industry standards, whichever affords greater protection. *2.* In any event, workers shall not on a regular basis be required to work in excess of 48 hours per week and shall be provided with at least one day off for every 7 day period on average. Overtime shall be voluntary, shall not exceed 12 hours per week, shall not be demanded on a regular basis and shall always be compensated at a premium rate.			
Criterion 7: *1.* There is no discrimination in hiring, compensation, access to training, promotion, termination or retirement based on race, caste, national origin, religion, age, disability, gender, marital status, sexual orientation, union membership or political affiliation.			
Criterion 8: 1. To every extent possible work performed must be on the basis of recognized employment relationship established through national law and practice. *2.* Obligations to employees under labour or social security laws and regulations arising from the regular employment relationship shall not be avoided through the use of labour-only contracting, subcontracting, or home-working arrangements, or through apprenticeship schemes where there is no real intent to impart skills or provide regular employment, nor shall any such obligations be avoided through the excessive use of fixed-term contracts of employment.			
Criterion 9: 1. Physical abuse or discipline, the threat of physical abuse, sexual or other harassment and verbal abuse or other forms of intimidation shall be prohibited.			

FLO: Fair-Trade Labelling Organisations International (social conditions)

General characteristics:	
Status:	In implementation
Geographical coverage:	International, limited to a defined list of countries, see also: http://www.fairtrade.net/fileadmin/user_upload/content/Geographical_scope_12_07.pdf
Scope:	Agricultural products. Production standards are now available for: Bananas, Cocoa, Coffee, Cotton, Flowers, Fresh Fruit, Honey, Juices, Nuts and Oilseeds, Rice, Spices and Herbs, Sports Balls, Sugar, Tea, Wine and Composite Food Products [14].
Initiator system:	Founded in 1997 as an umbrella organization of 17 national fair-trade labeling initiatives [12]

Short summary system or initiative:	Extension system:	
Objective of FLO is to contribute to the Social and Economic Development of Farmers and Workers in the Global South through a credible and competent Certification System [12].	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Y
Context:		
Actively involved in supporting producers, awareness raising and campaigning for changes in the rules and practices of conventional international trade.		
Status of system:		
In implementation. The Fairtrade Standards are reviewed and updated regularly. The most recent announcements are available on the website of FLO [14].		
Planned activities:		

Structure system or initiative:	
Juridical basis:	Voluntary
Participation:	Includes the participation of stakeholders in terms of drafting proposals for new or revised standards [12]. Standards are developed by the FLO Standards Committee, in which stakeholders from FLO member organizations, producer organizations, traders and external experts participate [15]. All members and certified producer organizations participate in FLO decision-making through the General Assembly and their respective Assemblies: the Labeling Initiatives' Assembly or relevant Producer Network Assemblies. The Board is elected by the General Assembly and includes: Representatives from the Fairtrade Labeling Initiatives (5), from Fairtrade certified producer organizations (4), from Fairtrade certified traders (2) and external independent experts (3) [14].
Local stakeholder involvement	There is no direct involvement of stakeholders in the verification process. Inspection reports are not published [12]
Monitoring performance:	
Chain of custody system	FLO undertakes the monitoring and inscription of producers while the national initiatives are responsible for the control of fair trade labels and registering importers/retailers. In order to grant the use of the fair trade label, the national initiative must ensure that retailers have complied with fair trade contracting conditions [12]. Physical traceability is required [16].
Level of detail CoC system:	Certification is done by an independent international certification company, FLO-CERT GMBH. FLO-CERT coordinates the inspections. Verification: Third party verification is a must for application of FT standards. The certification body undertakes yearly inspections based on a risk model. In between inspections incoming information about potential non compliances are taken into considerations for additional checks or inspections [15]. Operators need to be in full compliance with major compliance criteria related to minimum and progress requirements of the standards, to prevent suspension or withdrawal of certificate. Non compliance with minor

	compliance criteria may lead to corrective actions or certification conditions. Fairtrade has a specific unit – the Producer Business Unit (PBU) - that supports producers to come into compliance if there is a need. The PBU works with staff on ground and in the central office and also conveys training material to producers [15]. The renewal Certification Cycles vary between one year and 3 years [12]. Preparing for ISO accreditation.

Further information on:	
Removal of trade barriers	-
Costs:	

FLO has **generic product standards [17].** There are two sets of generic standards: one for small farmers and one for laborers on plantations and factories. Producers have to comply with Generic product standards and standards specific to their products situations.
FLO has **generic trade standards [16]**. This generic standard is applicable to all producers and traders regardless of the product traded. It is important to know that each producer and their trading partners need to comply with both the Generic Standards and the Product Standards.
Standards have two layers: minimum requirements and progress requirements. Companies must meet the minimum standards from the moment they join Fairtrade and work towards achieving the progress requirements as long-term goals.

List of principles included for ***products*** standards – here shown for small producer's organizations [17]:	
1	Social development: Fairtrade adds to Development
2	Socioeconomic Development: The Fairtrade Premium is a tool for development, supporting the organization to realize their development objectives as laid down in its development plan. In the context of small producers' organizations it is meant for investment in the social, economic and environmentally-sustainable development
3	Environmental Development: The producers' organization ensures that its members protect the natural environment and makes environmental protection a part of farm management.
4	Labor conditions: FLO regards the ILO Conventions as the authority on working conditions, and expects all small producers' organizations to meet the ILO requirements as far as possible.

List of principles included for ***trade*** standards [16]:	
1	Certification: All operators taking ownership of Fairtrade certified products and/or handling the Fairtrade price and premium are inspected and certified.
2	Traceability: Traceability requirements are put in place to protect operators and consumers.
3	Contracts: Contracts between producers and buyers set the framework for Fairtrade trade operations. It is important that the contractual obligations are mutually agreed, well documented, and clearly understood by the contracting parties.
4	Sustaining trade: Above and beyond standards requirements, it is important that these relationships grow stronger over time and are based on mutual respect, transparency and commitment.
5	Pre-finance: Pre-finance is one of the core benefits for producers within the Fairtrade system. The intention of this section is to help producers gain access to reasonable forms of financial assistance to support their purchases from members.
6	Pricing: Fairtrade minimum prices are meant to protect and reduce the risks for producers in the event that market prices fall.

Criteria for Fairtrade **Product** Standards [17]	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
1.1 Fairtrade adds to Development Progress requirements: a) Within one year of certification, the organization carries out a needs assessment of how the Fairtrade benefits can help promote the environmentally-sustainable social and economic development of the organization and its members. b) Within three years of certification, the organization has a development plan in place indicating how the Fairtrade benefits will help promote the environmentally-sustainable social and economic development of the organization and its members. The development plan is based on democratic and transparent decision-making.	a) The organization is expected to create a development plan b) Based on the results of the needs assessment the organization must create and implement a development plan within three years of certification. The development plan is explained, discussed and agreed at the annual General Assembly and revised on an annual basis.		
1.2 Members are Small Producers a) The organization has membership criteria as defined in its own stated rules and regulations (the organization's constitution or by-laws). b) The majority of the members of the organization are small producers (> 50%) c) Fairtrade products may only be sourced from members. The organization must therefore ensure that products from members are kept separate from non-members' products. Where an organization wishes to sell products produced by non-members, these must not be sold as Fairtrade products. d) For every Fairtrade product sold by the organization, more than 50% of the volume must be produced by small producers.	a) Regulations for registration of members of the organization must be specified in the by-laws and statutes of the organization. Membership data must be kept at the office of the organization and regular updates should be given to members about their membership status. b) More than 50% of the members must be small producers according to the product-specific category and indicators as defined in the introduction. c) - d) On a yearly average, smaller producers must provide more than 50% of the volume sold under Fairtrade conditions		
1.3 Democracy, Participation and Transparency a) An organizational structure is in place which enables effective control by the members. There is a General Assembly with direct or delegated voting rights for all members as the supreme decision-taking body, and an elected Board. The staff answers to the General Assembly via the Board. b) The organization holds a General Assembly at least once a year. c) The organization's annual report, budgets and accounts must be presented to and approved by the General Assembly. d) Administration is in place. Progress requirements: e) From the moment of certification, the organization works towards transparent planning of the business. Such planning is approved by the General Assembly. f) The organization establishes or improves internal mechanisms to facilitate members' control over the administration. g) The participation of members in the organization's administration and internal control is promoted through training and education. h) Ongoing measures will be taken to review the members' commitment to the organization	a) The certification body will check whether the organization abides by its own stated rules and regulations b) The meetings must be properly minuted, signed by the President of the Board and at least one other member, and recorded. The minutes must contain a list of participants. c) - d) There is at least one person (or committee) in the organization responsible for managing the organizational administration and book-keeping. The organization also needs to have a bank account with usually more than one signatory. The official records and documentation must be maintained in a central place e) Organizations are required to make annual business plans (short-term strategic plans), cash flow prediction plans, and longer-term strategic plans. f) - g) The organization is required to provide training and education on business administration and internal control to its members h) Indicators for self-assessment will include the level of membership fees, the level of member participation at General Assemblies and any other organizational structures		
1.4 Non-Discrimination a) The organization does not discriminate against members or restrict new membership on the basis of race, color, sex, sexual orientation, disability, martial status, age, religion, political opinion, language, property, nationality, ethnicity or social origin. Furthermore, there must be no	a) - b) The organization is expected to show how it directly supports members from disadvantaged or minority groups to participate actively in the organization. The applicability of this requirement depends on the size	b) The organization must identify disadvantaged/ minority groups according to e.g. income, land area, age, and gender. Special attention should be given to the participation of female members.	

discrimination regarding participation, voting rights, the right to be elected, access to markets, or access to training, technical support or any other benefit of membership. b) Programs related to disadvantaged/ minority groups within the organization are in place to improve the social and economic position of those groups in the organization	of the organization and the number of members.		
2.1 Fairtrade Premium a) The organization administers and manages the Fairtrade Premium transparently. b) The use of the Fairtrade Premium is decided by the General Assembly and properly documented. Progress requirements: c) As soon as Fairtrade Premium monies are available, the organization puts an annual Fairtrade Premium plan and budget in place.	a) The organization must show that it has systems in place to administer the Fairtrade Premium in a transparent way b) - c) The Fairtrade Premium plan to be approved by the General Assembly contains general objectives, activities, mechanisms and/or projects to be financed during the coming year. An estimated budget should be included.		
2.2 Economic Strengthening of the Organization Progress requirements: a) The organization should take gradual steps to assume more control over the entire trading process. b) The organization will continue to develop its business-related operations and maximize the return to the members.			
3.1 Impact Assessment, Planning and Monitoring a) A person within the organization is given responsibility for ensuring the production of a plan giving details of how to comply with the environmental standards specified in this document. b) The organization ensures that for certified products no plant material is gathered from protected areas or is propagated in contravention of national and international regulations. Progress Requirements c) The organization seeking certification develops and then implements a formalized Internal Control System (ICS) that liaises with the certification body. d) Any harvesting of wild specimens or products from natural (uncultivated) areas by members of the organization must be done in a manner that assures the sustainability/survivability of the species in its native habitat. e) The organization has a plan for the improvement of the environmental and agricultural practices of its members and will monitor and report on performance objectives in the plan. f) The organization ensures that its members have identified conservation areas, buffer zones around water bodies and watershed recharge areas appropriate to the region, which will not be cultivated and to which agrochemicals will not be applied. g) New planting in virgin forest areas is prohibited. h) Buffer zones are maintained as required to protect water bodies and watershed recharge areas, virgin forests, and/or other legally protected areas and to protect agricultural plots from potentially polluting sources such as roads. i) In operations in areas of low biodiversity, where buffer zones are bare or undifferentiated from cash crops or in areas not suitable for cultivation, members should plant trees/bushes or otherwise encourage regeneration of natural flora and fauna. j) The organization has a plan that provides an adequate overview of current and projected use of land. k) The organization pursues research into and promote the implementation of	a) Initially, the plan will focus on the minimum requirements of the environmental standards. Over time the plan will also describe the actions that are needed to ensure compliance with the progress requirements. b) The organization's members should be able to prove the source of their planting stock (all plant material excluding seeds) on request of the inspector. c) The person(s) responsible for maintaining the internal control system should be able to show an organized methodology and record-keeping system that applies to all levels of the organization from the top management down to the individual member. Data should be updated on an annual basis at least. More details are given in standard. d) Harvesting should be done in a manner that: maintains the viability of the species and allows it to continue to perpetuate itself, is moderated to ensure that the product is still available to other species in the ecosystem that depend on it, ensures that the subsequent harvest cycle will provide a comparable quantity, notwithstanding, naturally occurring cycles/variations in production. e) The organization should: Notice and commend positive impacts, using them as a model, Monitor and stabilize neutral impacts. Neutral impacts can be accepted but must not decline into negative impacts, and should be improved whenever possible. Correct negative impacts. In order to effectively monitor these impacts and plans for their mitigation, the organization should specifically identify and describe some selected items. f) The information mentioned in this requirement should be documented by the organization and verifiable by inspectors. Maps or similar documentation should provide an indication of all pertinent areas. g) The certification body may make exceptions to this rule if the organization can prove that affected members have no other arable land. In such cases, the organization ensures that the new planting is done in a manner that preserves and integrates the native habitat to the		

agricultural diversification within its members' farms (including reforestation and establishment of shade cover as applicable) as is practical in its particular situation and this should be described in writing. Progress on this should be made over time. l) The organization maintains records that include land usage, agrochemical usage, crop rotation, and water usage. m) To the best of its ability, the organization supports the environmental and infrastructure projects of the local and regional authorities or other non-governmental organizations and programs to improve the living conditions of its members (e.g. housing, drinking water supply, roads, reforestation, sewage treatment, garbage and waste collection, transportation, community infrastructure etc.).	maximum possible extent. h) Size of the buffer zones depends on the local context. l) Records should be verifiable by inspectors. Data should be inclusive and detailed enough to ensure verification down to the individual producers' plot(s).		
3.2 Agrochemicals <u>Minimum Requirements</u> a) Materials on the FLO Prohibited Materials List may not be used or otherwise sold, handled, or distributed by the organization. b) This standard only applies to the materials that are exceptionally allowed in certain products and in certain countries, as specified in the tables of the FLO Prohibited Materials List. The use of the exceptionally allowed materials are minimized and undertaken only in case of definite need, in appropriate Health and Safety conditions and using advanced techniques. c) The organization ensures that agrochemicals are used, handled and stored correctly according to their specific characteristics (toxicity) in order to avoid danger to people and the environment. d) The organization ensures that all products and packages are clearly labeled. Whenever practical, storage should be in the original container. e) The organization ensures that all agrochemicals are only used for the crops for which they are specifically labeled and/or registered in the producer's country. f) The organization maintains safe storage and disposal of all agrochemicals and their containers. g) The organization or a subcontractor avoids air spraying of agrochemicals over rivers and other water sources of significant size. <u>Progress Requirements</u> h) This standard only applies to the materials that are exceptionally allowed in certain products and in certain countries, as specified in the FLO Prohibited Materials List. Producers must ensure that the use of the exceptionally allowed materials is phased out over time. The producer should be able to stop using the exceptionally allowed materials through the planning and application of appropriate agricultural techniques. i) Areas for preparing agrochemicals for use are equipped to handle spills and other mishandling effectively (for example with absorbent material). Spills must not be allowed to seep into soil or water supplies. j) The organization maintains a written record of all agrochemicals purchased, used and disposed of. k) The organization ensures that its members apply agrochemicals (where permitted within these standards/ FLO Prohibited Materials List) only on the basis of written evidence that they are necessary. l) The organization ensures that its members' decision to use herbicides (where permitted within these standards/ FLO Prohibited Materials List) is supported by written evidence showing that there is no available alternative treatment. m) Unused agrochemicals are returned to the supplier if feasible.	b) An appropriate plan and record to substitute these materials must be developed and operated. Evidence of need must be demonstrated by the producer. The producer shall demonstrate on the basis of credible evidence the definite need to use the exceptionally allowed materials. Exceptions are reviewed periodically by the certification body. c) The organization should develop an internal education and control system for agrochemical issues, in order to effectively comply with this standard. e) The organization should have an awareness-raising program in place to ensure producers receive the appropriate guidance to be able to comply with this standard. f) The organization should have an awareness-raising program in place; specify an estimated timeline for implementing the program and the actions to become compliant with this standard. Producers should have a safe means of disposal; make it known to producers what their individual options are; control and restrict reuse of agrochemical bags and containers. h) The producer shall employ apposite substitutes to the exceptionally allowed materials immediately when they become available on the market. Efforts to find such alternatives are properly documented. Alternative methods and potential substitutes are explored and assessed by practical trials. i) The use of chemicals should only be permitted once the producer has ensured that members are trained and application techniques for each material to be used. j) The responsibility for keeping such records can either fall on the organization or the individual producer or be shared between the two. In all cases, the organization's control system should have a way of verifying that the records are accurate. The certification body has the authority to require that additional records be kept in cases where inspectors show reasons to doubt the adequacy of the ICS.	c) The organization's plan should specify an estimated timeline for implementing such a system. Minimum requirements to the control system are defined. i) The producer should document significant mishaps in a manner that is readily available to Fairtrade inspectors. The producer should have a way of recording infractions and implementing remedial actions.	a) FLO publishes a list of materials that cannot be used, comprising data from the WHO Class I A&B, PAN's 'Dirty Dozen' and FAO/ UNEP Prior Informed Consent Procedure Lists plus FLO specific additional materials. The FLO Prohibited Materials List is an integral part of this standard.

n) The build-up of resistance to agrochemicals is avoided through appropriate production and dosage techniques and selection of appropriate plant varieties. o) The timing and type of chemical application(s) should be chosen with the aim of minimizing the quantities used and the threat of human or animal exposure and environmental harm. p) Aerial spraying by the organization or a subcontractor is undertaken for fungicide application only. Aerial spraying over buffer zones (if any), open water bodies, or residential areas is not undertaken. q) The organization demonstrates a continual reduction in the toxicity and use of agrochemicals and a continual improvement in its rational use to the greatest possible extent.			
3.3 Waste Minimum Requirements No minimum requirements applicable Progress Requirements a) The organization ensures that its members dispose of any non-agrochemical hazardous waste in a safe manner. b) The organization ensures that its members use organic waste in a sustainable way. c) The organization ensures that its members do not feed animals with organic waste that is contaminated by pesticides. d) The organization ensures that its members manage organic waste and crop residues appropriately to prevent the spread of disease or pest problems to crops, livestock, or humans. e) The organization ensures that its members do not burn waste if there is an environmentally less damaging alternative. f) Any materials that can be effectively recycled are. Paper, plastic, metal, wood, and other waste material must be separated and recycled whenever possible.	a) The organization should establish a plan for the disposal of all the non-agrochemical hazardous waste materials. Minimum requirements for this plan are defined. b) Recycling of natural resources should be maximized. The organization should develop a plan (specifying a timeline for its implementation) for sustainable use of organic waste. Minimum requirements for this plan are defined. e) Producers should be educated about which materials should never be burned, which materials can/cannot be burned under certain circumstances and what those circumstances are. If incineration of waste is deemed the only feasible solution, adequate conditions should exist to ensure that fire is controlled, etc.		
3.4 Soil and water Minimum Requirements a) The organization ensures that its members have undertaken procedures and practices designed to reduce and/or prevent soil erosion caused by wind, water, and/or human or animal impact. b) The organization ensures that its members have undertaken procedures and practices designed to enhance fertility and soil structure. Progress Requirements c) The producer ensures that water management, tillage practices, and/or use of irrigation water does not lead to or contribute to contamination of water supplies, excessive salinization of soil or desertification. d) The organization ensures that its members use irrigation methods and systems that minimize water consumption as much as is feasible for the operation in question. e) The organization ensures that its members use water for processing operations in the most efficient manner possible. f) The organization ensures that its members avoid the lowering of the groundwater level or any other negative effect on the availability and quality of drinking and irrigation water for the surrounding communities and farmers. g) The organization ensures that waste water is handled in a manner that does not have a negative impact on water quality, soil health and structure or food safety.	a) The organization should set up an education and control system concerning soil erosion, so that awareness is raised and actions are taken to become compliant with this standard. b) Understanding of the basic agronomic principles of tillage and irrigation practices, building of soil fertility, and crop rotation (as applicable) should be part of every organization's operating plan. In all cases, the organization should identify the water resources that are being used and document how (methods/ techniques) this was done. For those operations where desertification is a known or suspected potential problem, the organization should have a plan that includes concrete steps to conserve water. g) The organization should have a plan for monitoring the water quality of all waste water discharged. The organization should install water filtration or other treatment systems as necessary to meet the requirement.	a) The organization's plan should specify an estimated timeline for implementing such a system. Minimum requirements are set to the system as e.g. evaluates the possible causes of erosion on any of the land or affected water resources; Land that is at risk of erosion is noted by the organization, and monitored regularly; remedial actions appropriate to the problem should be imposed and followed up on a pre-decided timeline. b) The organization should set up an education and control system concerning fertility and soil structure. The organization plan should specify an estimated timeline for implementing such a system. Minimum requirements are set to the plan. g) The plan should include, at a minimum: establishment of baseline levels of acceptability for waste water quality; method(s) of analysis of water quality and a specified frequency of monitoring; a means to correct any incidence of	

h) The organization ensures that its members discharge waste water from any system with which the organization or its members are involved in a way that does not: pollute water that might be used as part of a human or animal drinking supply; contaminate soil or crops with chemicals or their by-products; contaminate crops or soil with excessive nutrients or contaminate harvestable crops with pathogenic microbes.		contaminants down to adequate levels; documentation of the above, or other suitable means of recording or verification.	
3.5 Fire Minimum Requirements No minimum requirements applicable Progress Requirements a) The organization ensures that its members use fire to clear or prepare land for production only if it is known that this is the preferred ecological option. b) The organization ensures that only trained members use fire to clear or prepare land. c) The organization ensures that its members have adopted fire safety procedures and practices that are appropriate to the operation.	b) It is up to the organization to define what proper training is, based on their particular situation. This definition should be in written form and available to the inspector and the certification body. The organization should establish formal guidelines and clear practices to ensure that only targeted lands are burned, and that non-target lands are left unaffected. c) The organization should establish basic rules for fire management. These should be in written form and also communicated to all members.	a) The certification body has the authority to require written justification that the practice is necessary, on a case-by-case basis.	
3.6 GMO Minimum Requirements The organization ensures that its members do not grow any GMO products. Progress Requirements a) The organization ensures that its members monitor possible GMO usage by neighbors and where necessary take additional precautions to ensure that their crops or any seed or propagation material saved for future plantings are not contaminated by GMO traits. b) The organization ensures that its members do not use any products derived from GMOs in primary production or in processing. c) Inputs, processing aids, and ingredients are traced back one step in the biological chain to the direct source organism from which they are produced to ensure that they are no longer regarded as GMOs.	a) The organization shall have a written plan that describes what methods it will employ to fulfill this requirement including amongst others verification of seed and seed control b) The organization shall investigate all inputs used in field production and processing. It shall verify that no inputs that are used in the production or processing system constitute a GMO under Fairtrade certification. The means of verification shall be specified by the organization, approved by the certification body and verified by the inspector.		
4.1 Labor conditions – employment policy Minimum requirements No minimum requirements applicable Progress requirements a) Within three years of certification the organization has developed an employment policy as part of its development plan	a) The organization starts developing an employment policy by carrying out an assessment on how to improve the working conditions of both its own workers and any workers employed by individual members of the organization. Plan includes: awareness raising tools, consulting of employers, etc.		
4.2 Freedom from discrimination Minimum requirements a) The organization ensures that there is no discrimination on the basis of race, color, sex, sexual orientation, disability, marital status, age, religion, political opinion, membership of unions or other workers' representative bodies, national extraction or social origin in recruitment, promotion, access to training, remuneration, allocation of work, termination of employment, retirement etc. b) The employer does not engage in, support or tolerate the use of corporal punishment, mental or physical coercion or verbal abuse. c) The employer does not engage in, support or tolerate behavior that is sexually intimidating, abusive or exploitative.	b) Workers should be aware of this policy. The organization should have in place an adequate system of records. c) Where discrimination is endemic within a sector or region an appropriate policy and system should be put in place to prevent any behavior that is not in line with this requirement. The organization should have in place an adequate system of records.		b) The policy shall be in line with the principle of non-discrimination.
4.3 Freedom of Labor Minimum requirements a) Forced labor does not occur. b) Child labour does not occur. Children below the age of 15 are not employed (contracted).	a) The employer must not retain any part of the workers' salary, benefits, property or documents in order to force them to remain in that employment. The employer must also refrain from requiring or forcing workers to remain in employment against their will through the use of any physical or psychological measure. The employer must explain to all workers that each worker is free to		As defined by ILO conventions 29 and 105, forced labour includes work that is exacted from any

c) Working does not jeopardize the school attendance, the educational attainment, or the social, moral or physical development of the person less than 18 years of age. d) Persons under 18 years of age shall not be admitted to any type of work which, by its nature or the circumstances under which it is carried out, is likely to jeopardize their health, safety or morals. e) Persons under 18 years of age shall not be allowed to undertake work during the night. f) Employment of a worker is not conditional on the employment of their spouse. Spouses have the right to work elsewhere.	leave at any time, giving a due notice period as per his or her contract. The term 'bonded labour' also refers to workers having received loans from employers, when these loans are subject to unreasonable terms and conditions. b) Where children help their parents at individual member level after school and during holidays this is not considered as child labour under defined conditions. Where children have worked or been employed in the past, it is expected that the organization has put in place a remediation policy. Wherever applicable the organization considers the underlying social and economic context in its development plan for effectively eliminating child labour.		person under the menace of any penalty and for which the said person has not offered him or herself voluntarily.
4.4 Freedom of Association and Collective Bargaining Minimum requirements a) The employer recognizes in writing and in practice the right of all workers to establish and to join workers' organizations of their own choosing and to collectively negotiates their working conditions. Workers are free to legally incorporate their organization. b) The employer allows trade unions not based at the organization to meet and share information with the workforce at an agreed time and place without the interference of management. The employer allows information meetings between workers and trade union officials to take place. Participation of workers in this meeting is voluntary. c) The employer ensures that neither workers nor their representatives are discriminated against or suffer other repercussions because of freely exercising their right to organize or because of their decision whether or not to join a workers' organization and/or participate in its legal activities. Progress requirements d) If no active and recognized union is able to work in the area, the organization encourages the workers to democratically elect a workers' organization which represents them and which negotiates with the employer to defend their rights and interests. e) The representation and participation of the workers is improved through training activities for workers and administrative staff alike. The employer provides adequate resources for this to take place.	a) It is expected that there has not been any opposition from the employer to workers organizing themselves within two years prior to application for certification, or, if this has been the case, that the organizational circumstances have changed substantially in the intervening time (e.g. through a change of management). c) It is expected that the employer does not move or close production or deny access to workers for the direct purpose of retaliating against those who have formed or are attempting to form a workers' organization. The employer is requested to report all cases of dismissals of union or workers' organization leaders to the certification body immediately, giving reasons for dismissal. The employer maintains a register of all terminated contracts with details on reasons for termination and indicating whether the worker was a member of a union or workers' organization.		The term 'workers' organizations' is used in reference to ILO Convention 110. The ILO defines the term as any organization of workers with the aims of furthering and defending the rights and interests of workers.
Conditions of employment Minimum requirements a) Conditions of employment and in particular salaries are equal to or exceed sector CBA regulations where they exist, regional average wages or official minimum wages for similar occupations, whichever is higher. The employer shall specify wages for all functions. b) Payment is made regularly and in a timely manner, in legal tender, and is properly documented. Progress requirements c) Other relevant conditions of employment and non-monetary benefits are at least equal to national law, the sector CBA regulations where they exist, or the Agreement signed between the workers' organization and the employer, whichever is more favorable to the employee. d) All permanent workers must have a legally binding written contract of employment. e) An adequate regulation on sick leave is put in place. f) A working hours and overtime regulation is put in place. g) Salaries are gradually increased to levels above the regional average and official minimum.	a) National laws and applicable CBA terms must be complied with. Where national laws and applicable CBA terms exceed this standard, they supersede the standard .Where the provisions in this standard exceed national laws and CBA terms then this standard shall apply. b) Documentation should consist of pay slips bearing all necessary information. c) National laws and applicable CBA terms must be complied with. Where a workers' organization exists it is encouraged to negotiate the conditions of work with the employer. Workers have the right to choose representatives to take part in any negotiations, without external interference. d) The contract shall include all necessary items related to the position of the worker. The worker must be provided with a copy of the signed contract. f) Working hours and overtime must comply with applicable law and industry standards. g) It is expected that salaries will be negotiated between the employer and the workers' organization (where it exists) through a benchmarking system and in relation to the additional income the organization or member realizes through Fairtrade. I) The annual employers' work plan specifies measurable objectives with		

h) Where possible all regular work is undertaken by permanent workers. i) Local and migrant, seasonal and permanent workers receive equivalent benefits and employment conditions for equal work performed.	regard to this.		
4.6 Occupational health and safety Minimum requirements a) Work processes, workplaces, machinery and equipment on the production site are as safe as reasonably practicable. b) The following persons must not undertake any potentially hazardous work: persons younger than 18 years; pregnant or nursing women; *etc.* c) The employer provides adequate emergency first aid facilities, equipment and appropriately trained first aid staff to meet all reasonably foreseeable emergency first aid situations. d) All workers must have access to potable water and clean sanitary facilities. Progress requirements e) A workers' representative must be nominated who can be consulted on health and safety issues and who raises workers' concerns on health and safety issues with the organizational management. f) Workers engaged in any potentially hazardous work are adequately trained. g) A worker performing hazardous a task are provided with adequate personal protective equipment of good quality and in good condition at the employer's expense.This applies to all workers, including temporary workers. h) A Health and Safety policy is developed to minimize any inherent risk to health. i) Workers and their representatives are trained in the basic requirements of occupational health and safety, relevant health protection and first aid.	a) The organization is expected to carry out a risk analysis of health and safety issues. This risk analysis shall identify risk areas and potential hazards. c) Suitably stocked first aid boxes must be present in the workplace and be quickly accessible at all times. The employer trains a reasonable number of workers (in relation to the size of the operation) in first aid. d) Drinking water facilities must be clearly labeled as such and be placed within reasonable proximity to the workplace. The number of sanitary facilities must be in proportion to the number of workers. Sanitary facilities must be well maintained. Hand washing facilities must be close to toilets. e) The workers' representative on health and safety issues is not necessarily hired exclusively for this task but may have other duties and responsibilities within the operation. Where appropriate the workers can choose to create a health and safety committee h) A Health and Safety (H & S) policy shall be developed that addresses all necessary measures, means and control points. The policy is documented and communicated to the workers and is part of the overall employment policy I) Special measures are taken to identify and avoid recurring health risks to vulnerable workers operating in high risk areas. All workers will be given a formal induction and refresher training on occupational health and safety issues related to all aspects of their tasks. All training activities must be recorded including information on topics, time, duration, names of attendees and trainers.		

Criteria for Fairtrade **Trade** Standards [16]	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
1.1 All operators will be subject to inspection and certification to assess compliance with this standard.			
1.2 Unless otherwise stated in the product standards, certified producers may sell products that have been held in stock for a maximum of one year before the certification was initially granted as certified.			
1.3 All operators must designate one official contact for Fairtrade-related matters.	All operators must designate one key contact person (a Fairtrade Officer) within their organization. The Fairtrade Officer will be the main contact person for certification and inspection issues.		
2.1 Products that are bought, sold or altered as Fairtrade must originally have been produced by certified producers and must be physically traceable through product labeling. Documentary traceability must also be ensured by using an identification mark clearly indicated on all related documentation.	The physical product must be identifiable. The method of identification is at the discretion of the operator, but must be verifiable (e.g. the FLO ID or "FLO Fairtrade" on the packaging). This standard also requires that buyer and seller must clearly indicate an identification mark on the related documentation (such as Contracts, Bills of Lading, Delivery Notes, Invoices). All operators must ensure that they and the certification body will be able to trace: · The seller of the product · The physical form of the product when transacted · The alterations performed and relevant yields · Disposals		

	· Quantities bought and sold (one up – one down) · Date of transactions · Payment of Fairtrade price and Fairtrade premium and pre-financing (where applicable). Certified products bought and sold as loose must be stored in a dedicated area and kept spatially or temporally separate from non-certified products. Where this is not possible, all necessary steps must be taken by the operator to ensure that risks of substitution of certified with non-certified products are minimized.		
2.2 Where operators cannot demonstrate full compliance to physical traceability requirements specified in standard 2.1, then a transition period applies. This period may last no longer than two years from the date the Generic Trade Standard comes into force. Requirements on traceability through documentation must still be complied with.			
3.1 Buyers must sign binding purchase contracts with producers. All contracts between producers and Fairtrade payers or conveyors must stipulate an arbitration mechanism agreed by both parties.	Unless otherwise stated in the product standards, contracts must as a minimum clearly indicate the: · agreed volumes · quality · price · payment terms · delivery conditions		
3.2 Where notice is made of a producer's or buyer's suspension from Fairtrade, signed contracts made before the date of notice will be recognized as valid for Fairtrade-certified products for a maximum period of six months.			
3.3 Where an operator is decertified, they must immediately stop buying or selling products as Fairtrade-certified. This standard is applicable from the date of decertification. Contracts with a decertified operator that have been fulfilled before the date of decertification shall be accepted. Contracts that have not been fulfilled at the point of decertification shall not be classified as Fairtrade contracts.			
3.4 Buyers must not offer to buy certified products from a producer on condition that the producer sells a quantity of non-certified product under terms that are distinctly disadvantageous to the producer.			
3.5 Producers must have access to the contracts signed between conveyors and Fairtrade payers.			
3.6 Producers must have access to the contracts signed between conveyors and Fairtrade payers.			
4.1 Buyers (including those making purchases via marketing boards) must provide a sourcing plan to each producer from whom they plan to buy, as well as to conveyors, if applicable.	Sourcing plans are developed with reference to qualities, quantities, dates of delivery or purchase, price or value as outlined in the product standards.		
5.1 Producers may request pre-finance from Fairtrade payers against agreed time periods and, where required, against specific quantities, unless otherwise specified in the product standards.	Where marketing boards exist, pre-finance requirements are not applicable to the relevant products.		
5.2 Where pre-financing is requested and unless otherwise stated in the product standards, Fairtrade payers must provide pre-finance up to 60% of the contract value. The minimum percentage of the pre-finance must be defined by the producer			
5.3 Fairtrade payers must make pre-financing available from the point of signature of contract onwards and not later than a specified time period as stated in the product standard.			
5.4 Where a sufficiently high level of risk of non-repayment or non-delivery has been associated with a particular producer, and only where that level of risk has been assessed and verified via a third party lender, then the pre-			

finance requirements under standards 5.2 and 5.3 do not have to be met.			
5.5 Interest charges on the pre-financed value must be agreed by both the buyer and the producer. They must not exceed the buyer's current cost of borrowing (including administrative costs), and buyers are encouraged to make pre-finance available on better terms (at lower rates of interest) to the producer.			
5.6 The requirements of local and national legislation take priority where they conflict with these requirements on pre-finance.			
5.7 When pre-finance has been agreed upon, the Fairtrade payer must document either a separate pre-finance section within the contract or a separate credit agreement with the producer.			
6.1 Fairtrade payers must pay to producers at least the Fairtrade Minimum Price for the product contracted, where it exists, or the relevant market price where no Fairtrade Minimum Price exists. When the relevant market price for a product is higher than the Fairtrade Minimum Price, then at least the market price must be paid.			
6.2 Fairtrade payers must additionally pay a Fairtrade Premium for the product. Where applicable, conveyors are responsible for passing the Fairtrade Premium on to the producer.	Rules for payment apply differently to different types of Fairtrade organizations, as follows: · For Small Producers' Organizations, payment must be made directly to the certified Small Producers' Organization. · For Hired Labor Situations, payment must be made directly to the account of the Joint Body of the certified Hired Labor operator. · For Contract Production Projects, payment must be made directly to a separate account for which the Promoting Body or its nominee is responsible. · Where appropriate, payment may also be made to a Premium Trust fund or Premium Channel, or to another agreed third party with the written permission of the producer.		
6.3 The price may be fixed, by mutual agreement, for any future delivery date, unless otherwise stated in the product standards.			
6.4 Fairtrade Minimum Prices are set at one or several levels in the trade chain.			
6.5 Cases may also arise where Fairtrade Minimum Prices are set at relevant levels, but where the producer or the payer bears the costs of certain activities which are not reflected in the price.			
6.6 Unless otherwise specified in the product standards, Fairtrade payers may use any available payment method as long as it is transparent, traceable and mutually agreed between the Fairtrade payer and the producer.			
6.7 Payment of the Fairtrade price must be made no later than 30 days after date of invoice unless otherwise specified in the product standard.			
6.8 New Fairtrade Minimum Prices apply from the date of their announcement by FLO unless otherwise defined by FLO. However, existing contracts must be honored at the price already agreed on.			

European Committee for Standardization (biomass for energy)

General characteristics:	
Status:	In implementation
Geographical coverage:	Europe
Scope:	
Initiator system:	CEN is a non-profit making technical organization founded by the national standards bodies in the European Economic Community and EFTA countries, developing voluntary technical standards [18].

Short summary initiative:	Extension system:	
A technical committee (CEN TC 383) on 'Sustainably produced biomass for energy applications' is established to promote the standardization in the field of sustainable produced biomass, to provide agreements for producers to promote sustainable production, for certifiers to test for compliance, and for authorities to set requirements to biomass applied [18].	Principles included:	Under development
	Criteria included:	
	Indicators included:	

Context:
The use of standards is always voluntary. However, European standards are sometimes related to European legislation (Directives) and conformity to such standards may constitute a presumption of conformity to the legal requirements of the Directives. To support their legislation by written standards, the EC gives Mandates to CEN. This usually consists of a sponsored assignment to write such a standard, supported by inter-laboratory testing [19].
Status of system:
Various working groups are established being [19]: - WG1: Terminology; WG2: Greenhouse Gas emissions; - WG3: Biodiversity; WG4: socio-economic aspects; - WG5: verification and auditing WG6: indirect effects During the CEN/TC 383 meeting of June 2009, it was decided that the CEN/TC 383 will in first instance focus on the principles that are also included in the RED from the EC. This means that WG6 and WG4 are set on a hold at this moment. Further decision making on further work of these 2 WGs will be made end 2009 / begin 2010. Working plans per WG are defined [20].
Planned activities:
Development of verifiers and indicators per WG in the coming year [20].

Structure system or initiative:	
Participation:	CEN standards are prepared by all interested parties [18]. There are different 'levels' to participate (or observe) in CEN/TC 383 [19]: * Participation in one ore more Working Groups via National Standardization Institute * Participation through National Standardization Institute as a member of national mirror committee of CEN/TC 383.
Local stakeholder involvement	
Monitoring performance:	
Chain of custody system	
Level of detail CoC system:	

Further information on:	
Removal of trade barriers	
Costs:	

List of principles included:	
1	
2	
3	

UN-Energy (bioenergy)

General characteristics:	
Status:	Report published
Geographical coverage:	Worldwide
Scope:	All bioenergy systems with a focus on modern bioenergy.
Initiator:	UN-Energy (collaborative framework for all UN bodies that contribute to energy solutions).

Short summary initiative:	Extension system:	
The report provides a framework for decision-makers to consider nine key sustainability issues facing bioenergy development. Every principle is accompanied with various issues that need to be addressed in the local context [21].	Principles included:	Y
	Criteria included:	-
	Indicators included:	-
Context:		
The report from [21] aims to contribute to energy sustainability issues that need further attention, analysis and valuation, so that appropriate trade-offs can be made.		
Status of system:		
Various meetings held in 2008.		
Planned activities:		
Section 4 of the reports is on “Looking forward” and gives recommendations for further action.		

Structure system or initiative:	
Participation:	The paper was drafted collectively by UN-Energy members.
Local stakeholder involvement	-
Monitoring performance:	-
Chain of custody system	-
Level of detail CoC system:	-

List of principles included [21]:	
1	Ability of modern bioenergy to provide energy services to the poor
2	Implications for agro-industrial development and job creation
3	Health and gender implications of modern bioenergy
4	Implications for the structure of agriculture
5	Implications for food security
6	Implications for government budget
7	Implications for trade, foreign exchange balances, and energy security
8	Impacts on biodiversity and natural resource management
9	Implications for climate change

Issues that need to be addressed in the local context [21]:	
1	a. Resource availability and competing uses b. Economic access, reliability and accessibility
2	a. Type of agro-industry to be developed (short and long term) b. Scale of bioenergy agro-industrial chains c. Large versus small companies d. Type, quality and distribution of employment e. Infrastructure considerations f. Powering or fuelling other industries
3	a. Ability to reduce indoor pollution, lower infant mortality, and raise life expectancy b. Ability to reduce time, effort and injury associated with traditional fuel gathering and cooking; c. Ability to minimize public health risks from oxygenate use in transport fuels
4	a. Which crops are most promising? b. Structural implications of various crops c. Historical land tenure, production chain ownership and credit availability
5	a. Who are the hungry? b. Impact and food availability

	c. Impact on food access
6	a. Tax reductions for liquid biofuels b. Size of subsidies and tax reductions c. When fiscal support might be appropriate
7	a. Ramifications for foreign exchange balances b. Impacts of agricultural trade policy
8	1. Feedstock choice, land use, and soil health 2. Impacts on grasslands, tropical forests and other biodiverse systems 3. Impacts on water quality and availability 4. Impact on air quality
9	a. Factors affecting net GHG emissions b. GHG reduction potential c. Trade-offs: costs and limited resources

UNEP (bioenergy)

General characteristics:	
Status:	In implementation
Geographical coverage:	Worldwide
Scope:	
Initiator system:	UNEP Bioenergy program

Short summary initiative:	Extension system:	
UNEP bioenergy program is structured around the following priority areas [22]: • Sustainable Development impacts and synergies • Resource Assessment • Market creation and policy interventions • Business development and finance.	Principles included:	-
	Criteria included:	-
	Indicators included:	-

Context:

Status of system:

UNEP has developed, within its work on bioenergy, two main review studies on LCA / GHG emissions of biofuels, which resulted in a [23]:

- Chapter on LCA for the OECD Ministerial Council Meeting (MCM) report in cooperation with the International Energy Agency (IEA)
- Report for the International Panel for Sustainable Resource Management

The review includes an analysis of 60 studies (Full LCA studies: 32%, Energy and GHG emission balances: 33%, Methodological / review studies: 23% and others) and focus mostly on transport applications. The review concluded that there are a number of research gaps. There is therefore a need for more full LCA studies on other crops and geographical contexts. Related to the methodology, a number of open questions are mentioned [23].

UNEP is hosting a series of issue papers designed to provide an overview of critical emerging topics in the field of bioenergy production, and outline options towards sustainable production and use of bioenergy [22]:

- No.1: The first in the issue paper series will take a look at land use, land use change and bioenergy. The paper was inspired by discussions from 2nd Joint International Workshop on Bioenergy, Biodiversity Mapping and Degraded Lands, for which the workshop report can be found here.
- No.2: The second issue paper reviews the critical nexus between bioenergy and water, flagging the key issues in regard to water use and efficiency in bioenergy systems, water quality and impacts, and research gaps.

UNEP also co-organized the 2nd Joint International Workshop on Bioenergy, Biodiversity Mapping and Degraded Lands held from July 7-8, 2009 at UNEP DTIE Office in Paris, France, see also [24]

Planned activities:

Focusing on hosting series of various critical issues in the debate of bioenergy

Global Bioenergy Partnership GBEP (bioenergy)

General characteristics:	
Status:	In development
Geographical coverage:	Worldwide
Scope:	Biomass and bioenergy
Initiator system:	The Global Bioenergy Partnership (GBEP) was launched during the Ministerial Segment of the 14th session of the Commission on Sustainable Development (CSD14) in New York on 11 May 2006, with a signing ceremony of the Terms of Reference [25].

Short summary initiative:	Extension system:	
GBEP provides a forum to develop policy frameworks to [25]: • Suggest rules and tools to promote sustainable biomass and bioenergy development; • Facilitate investments in bioenergy; • Promote project development and implementation; • Foster R&D and commercial bioenergy activities.	Principles included:	Y
	Criteria included:	Y
	Indicators included:	N
Context:		
GBEP was established to implement the commitments taken by the G8 in the 2005 Gleneagles Plan of Action to support "biomass and biofuels deployment, particularly in developing countries where biomass use is prevalent" [25].		
Status of system:		
The GBEP Task Force on Sustainability, established under the leadership of the UK, is working to develop a set of global science-based criteria and indicators as well as examples of experiences and best practices regarding the sustainability of bioenergy. The criteria and indicators are intended to guide any analysis undertaken of bioenergy at the domestic level with a view to informing decision making and facilitating the sustainable development of bioenergy in a manner consistent with multilateral trade obligations [25]. The Task Force has released in June 2009 a report containing a common methodological framework for the use of policy makers and stakeholders when assessing GHG impacts by which the results of GHG lifecycle assessments could be compared on an equivalent and consistent basis [25].		
Planned activities:		
The Task Force will now go on to implement the GHG methodological framework as a tool for comparing the results of various methodologies for assessing GHG emissions from bioenergy systems and communicating the results in a transparent way [25]. The Task Force aims to present its set of C&I during the G8 meeting in Toronto in 2010		

Structure system or initiative:	
Participation:	Current partners are: Brazil, Canada, China, Fiji Islands, France, Germany, Italy, Japan, Mexico, Netherlands, Russian Federation, Spain, Sudan, Sweden, Switzerland, Tanzania, United Kingdom, United States of America, FAO, IEA, UNCTAD, UN/DESA, UNDP, UNEP, UNIDO, UN Foundation, World Council for Renewable Energy (WCRE) and European Biomass Industry Association (EUBIA). Various other countries and the World Bank are observers [25].
Local stakeholder involvement	Participation is recognized as criterion. Principles are developed for a country level. Not yet defined how this will be further elaborated.
Monitoring performance:	“Monitoring progress and enforcing compliance” is mentioned as criterion. The principles are developed for a country level.
Chain of custody system	-
Level of detail CoC system:	-

Further information on:	
Removal of trade barriers	-
Costs:	-

The list of principles and criteria developed by GBEP are still in draft version and under debate [26].
The draft principles and criteria are circulated in draft version, not published officially in draft version yet.

List of principles included:	
1	Environmental Basket
2	Economic Basket
3	Social Basket
4	Energy Security
5	Good Governance

Criteria GBEP	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
1a. Greenhouse gas emissions [from bioenergy compared to fossil fuels]		GHG methodology developed	
1b. Productive capacity of the land			
1c. Direct and indirect impacts arising from bioenergy related land use change			
1d. Air quality			
1e. Water availability, use efficiency and quality			
1f. Biological diversity, ecosystems and landscapes			
2a. Resource availability and resource use efficiencies in bioenergy production, conversion, distribution and end-use			
2b. Economic development and balance of trade or payments			
2c. Economic viability and competitiveness of bioenergy			
2d. Access to technology and technological capability, including research, development and demonstration and innovation			
3a. Direct and indirect impacts of trade policies			
3b. Food security			
3c. Land and water rights			
3d. Human and labour rights			
3e. Equity of access of energy at the local level			
3f. Human and health [and safety]			
3g. Institutional, policy and legal framework			
4a. Energy security			
5a. Respect the rules			
5b. Responsible investment approaches			
5c. Transparency and participation			
5d. Monitoring progress and enforcing compliance			
5e. Institutional capacity to manage sustainable bioenergy development			

RSPO, Roundtable on Sustainable Palm Oil (commodity)

General characteristics:	
Status:	*Theoretical development, In implementation, in pilot phase*
Geographical coverage:	Worldwide but limited to palm oil growing regions (focus on Asia)
Scope:	Certification system for palm oil (commodity) including production, trading, processing and retailing.
Initiator system:	Companies, NGOs, palm oil growers (voluntary)

Short summary system or initiative:	Extension system:	
RSPO is a global, multi-stakeholder initiative on sustainable palm oil. The principal objective of RSPO is to promote the growth and use of sustainable palm oil through cooperation within the supply chain and open dialogue between stakeholders [27].	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Y
Context:		
In response to the urgent and pressing global call for sustainably produced palm oil, the Roundtable on Sustainable Palm Oil (RSPO) was formed in 2004 with the objective of promoting the growth and use of sustainable oil palm products through credible global standards and engagement of stakeholders [28].		
Status of system:		
The revised P&C (and suggested guidelines) were approved in 2007. A smallholder Task Force was established in 2006 to ascertain the suitability of RSPO P&C for smallholders. There are 4 ongoing programs on a) Certification and standards, b) Trade and traceability, c) Communications and claims and d) Projects [27].		
Planned activities:		
The P&C are currently translated to national interpretations for Indonesia, Malaysia, Colombia and Papua New Guinea [27].		

Structure system or initiative:	
Juridical basis:	Voluntary RSPO membership
Participation:	Principles are developed through multi-stakeholder consultation. Technical Committee developed a framework for the development of criteria on sustainable palm oil. Proforest was contracted to RSPO as facilitator for the verification protocol development. A criteria-workgroup developed the criteria for the law, technical, ecological and social aspects for sustainable palm oil on international and national level. Drafting of national interpretations by the national working groups [12]. RSPO unites stakeholders from seven sectors of the palm oil industry - oil palm producers, palm oil processors or traders, consumer goods manufacturers, retailers, banks and investors, environmental or nature conservation NGOs and social or developmental NGOs. Multi-stakeholder representation is mirrored in the governance structure of RSPO such that seats in the Executive Board and project level Working Groups are fairly allocated to each sector [28].
Local stakeholder involvement	Procedures for verification assessment must include consultation with external Stakeholders [29].
Monitoring performance:	Included, short description
Chain of custody system	Book and claim, identity preserved, track and trace, mass balance Except for B&C: Either the processing facility or its parent company seeking certification shall be a member of the RSPO [30].
Level of detail (CoC) system:	<u>Verification:</u> The procedures must require that the initial verification assessments, and the subsequent monitoring or surveillance assessments, include an appropriate range of methods to collect objective evidence, including documentation review, field checks and interviews with external stakeholders [29]. CoC: record keeping, documentation, production controls. Supply chain actors who have physical ownership of RSPO certified palm oil must register their transaction in the RSPO Traceability System [30].

	The certificate is valid for 5 years. Verification takes place on an annual basis [31]. Certification bodies: Certification bodies must be accredited by national or international accreditation bodies, such that their organization, systems and procedures conform to ISO Guide 65 (EN 45011), and/or ISO Guide 66 [8]. Accreditation body: Accreditation body itself must be operating in accordance with requirements of ISO 17011:2004 Conformity assessments – general requirements for accreditation bodies accrediting conformity assessment bodies e.g. Membership of ISEAL. Auditors must meet ISO 19011: 2002 guidelines [8]

Further information on:	
Removal of trade barriers	
Costs:	Ordinary Member: $3700.00 per year Membership fee waivers/discounts available for applicants that can demonstrate insufficient funds Audit cost depends on country and auditing body. No audits yet as criteria still in consultation. Developing group certification option [8].

List of principles included [32]:	
1	Commitment to transparency
2	Compliance with applicable laws and regulations
3	Commitment to long-term economic and financial viability
4	Use of appropriate best practices by growers and millers
5	Environmental responsibility and conservation of natural resources and biodiversity
6	Responsible consideration of employees and of individuals and communities affected by growers and mills
7	Responsible development of new plantings
8	Commitment to continuous improvement in key areas of activity

In November 2009, it was decided to delay the inclusion of GHG criteria for the industry until a methodology is agreed upon. At this point, the GHG criteria will be a voluntary element in the P&C, unlike the other requirements under the RSPO Certification scheme [33, 34].

List of criteria and indicators RSPO [32]:

Criteria	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
1a. Growers and millers provide adequate information to other stakeholders on environmental, social and legal issues relevant to RSPO criteria, in appropriate languages and forms to allow for effective participation in decision-making	Records of requests and responses must be maintained. Guidance: growers and millers should respond constructively and promptly to requests for information from stakeholders.	Records of requests and responses.	
1b. Management of documents are publicly available, except where this is prevented by commercial confidentiality or where disclosure of information would result in negative environmental or social outcomes	This concerns management documents relating to environmental, social and legal issues, relevant to compliance with RSPO criteria. Documents that must be publicly available, but are not limited to, are a.o.: Land titles / user rights, Health and safety plan, Plans and impact assessment relating to environmental and social impacts, pollution prevention plan	Availability of management documents	
2a. There is compliance with all applicable local, national and ratified international laws and regulations.	Evidence of compliance with relevant legal requirements: A documented system, which includes written information on legal requirements, a mechanism for ensuring that they are implemented and a system for tracking any changes in the law. Systems used should be appropriate to scale of organization.	A documented system, which includes written information on legal requirements Mechanism for ensuring implementation System for tracking any changes in the law.	
2b. The right to use the land can be demonstrated, and is not legitimately contested by local communities with demonstrable rights.	Documents showing legal ownership or lease, history of land tenure and the actual legal use of the land. Evidence that legal boundaries are clearly demarcated and visibly maintained. Where there are, or have been, disputes, additional proof of legal acquisition of title and that fair compensation has been made to previous owners and occupants; and that these have been accepted with free prior and informed consent. Absence of significant land conflict, unless requirements for acceptable conflict resolution processes (criteria 6.3 and 6.4) are implemented and accepted by the parties involved.	Documentation about legal ownership or lease. Evidence that legal boundaries are clearly demarcated and visibly maintained. In case of conflict: evidence that necessary action is taken to resolve problem.	Protection of tenants and sharecroppers: ILO recommendation 132 (1968) on Tenants and sharecroppers. Art. 4-8
2c. Use of the land for oil palm does not diminish the legal rights, or customary rights, of other users, without their free, prior and informed consent.	Maps of an appropriate scale showing extent of recognized customary rights (criteria 2.3, 7.5 and 7.6) Copies of negotiated agreements detailing process of consent (criteria 2.3, 7.5 and 7.6)	Maps of an appropriate scale showing extent of recognized customary rights Copies of negotiated agreements detailing process of consent	
3a. There is an implemented management plan that aims to achieve long term economic and financial viability (not applicable for individual smallholders)	A documented business or management plan (minimum 3 years). Annual replanting program, where applicable, projected for a minimum of 5 years with yearly review.	Showing proof of documented business or management plan and annual replanting program.	
4a. Operating procedures are appropriately documented and consistently implemented and monitored.	Standard Operating Procedures for estates and mills are documented. A mechanism to check consistent implementation of procedures is in place. Records of monitoring & the actions taken are maintained.	Documentation of operating Procedures. Mechanism to check consistent implementation of procedures is in place. Records of monitoring and actions taken.	
4b. Practices maintain soil fertility at, or where possible improve soil fertility to, a level that ensures optimal and sustained yield.	Records of fertilizer inputs are maintained. Evidence of periodic tissue and soil sampling to monitor changes in nutrient status. A nutrient recycling strategy should be in place.	Records of fertilizer inputs and evidence of soil sampling to monitor changes in nutrient status. The nutrient recycling strategy should include: EFB, POME, palm residues after replanting and use of biomass for by-products / energy production	
4c. Practices minimize and control erosion and degradation of soils.	Maps of fragile soils must be available. A management strategy should exist for plantings on slopes above a certain limit (needs to be soil and climate specific). Presence of road maintenance program. Subsidence of peat soils should be minimized under an	Proof of Maps of fragile soils Management strategy Road maintenance and water management program and – if needed – management strategy for fragile soils.	

	effective and documented water management program. management strategy should be in place for other fragile and problem soils (e.g. sandy, low organic matter, soils)	Techniques that minimize soil erosion are known and adopted, where appropriate.	
4d. Practices maintain the quality and availability of surface and ground water	An implemented water management plan. Protection of water courses and wetlands, incl. maintaining and restoring appropriate riparian buffer zones. Monitoring of effluent BOD. Monitoring of mill water use per ton of FFB Growers and millers should address the effects of their use of water and the effects of their activities on local water resources.	The Management Plan may include: Taking account of the efficiency of use and renewability of sources. Ensuring that use of water does not result in adverse impacts on other users. Avoiding contamination of surface and ground water. Appropriate treatment of mill effluent and regular monitoring of discharge quality, which should comply with national regulations.	
4e. Pests, diseases, weeds and invasive introduced species are effectively managed using appropriate Integrated Pest Management (IPM) techniques.	An IPM plan is documented, incl.: a) Monitoring extent of IPM implementation incl. training. B) Monitoring of pesticide toxicity units (a.i./LD 50 per ton of FFB or per hectare). Due to problems in the accuracy of measurement, monitoring of pesticide toxicity is not applicable to smallholders.	IPM plan incl. monitoring of pesticide toxicity units.	
4f. Agrochemicals are used in a way that does not endanger health or the environment. There is no prophylactic use of pesticides, except in specific situations identified in national Best Practice guidelines. Where agrochemicals are used that are categorized as WHO Type 1A or 1B, or are listed by the Stockholm or Rotterdam Conventions, growers are actively seeking to identify alternatives, and this is documented.	Justification of all agrochemical use. Records of pesticide use (incl. active ingredients used, area treated, amount applied per ha and number of applications). Documentary evidence that use of chemicals categorized as Type 1A or 1B, or listed by the Stockholm or Rotterdam Conventions, is reduced and/or eliminated. Use of selective products that are specific to the target pest, weed or disease and which have minimal effect on non-target species should be used where available. Chemicals should only be applied by qualified persons who have received the necessary training and should always be applied in accordance with the product label. Appropriate safety equipment must be provided and used. All precautions attached to the products should be properly observed, applied, and understood by workers. Storage of all chemicals as prescribed in FAO or GIFAP Code of Practice. All chemical containers must be properly disposed of and not used for other purposes. Application of pesticides by proven methods that minimize risk and impacts. Pesticides are applied aerially only where there is a documented justification. Proper disposal of waste material, according to procedures that are fully understood by workers and managers. Specific annual medical surveillance for pesticide operators, and documented action to eliminate adverse effects. No work with pesticides for pregnant and breast-feeding women.	Records of pesticide use Documentary evidence Proof of training of people, safe storage and availability of safety equipment	World Health Organization Type 1A or 1B agrochemicals Stockholm Convention on Persistent Organic Pollutants (2001), Art. 1-5 FAO International Code of Conduct on the Distribution and Use of Pesticides (1985, revised in 2000), Art. 5 Rotterdam Conventions on Prior and Informed Consent procedure for certain hazardous Chemicals and Pesticides in international trade (1998), Art. 1, 5, 6 UN Declaration of the right of indigenous peoples (2007), Art. 21(1), 23, 24, 29(3)
4g. An occupational health and safety plan is documented effectively communicated and implemented.	The health and safety plan covers the following a.o.: A health and safety policy, which is implemented and monitored. All operations where health and safety is an issue have been risk assessed and procedures and actions are documented and implemented to address the identified issues. All workers involved in the operations have been adequately trained in safe working practices. The responsible person should be identified. There are records of regular meetings between the responsible person and workers where concerns of all parties about health, safety and welfare are discussed.	Proof of health safety plan incl. proof of meetings, risk assessment etc.	Health and Safety: ILO Convention 184 (2001) on Safety and health in agriculture, Art.

4h. All staff, workers, smallholders and contractors are appropriately trained.	A formal training program that includes regular assessment of training needs and documentation of the program. Records of training for each employee are kept.	Availability of training records and formal training program	
5a. Aspects of plantation and mill management, incl. replanting, that have environmental impacts are identified, and plans to mitigate the negative impacts and promote the positive ones are made, implemented and monitored, to demonstrate continuous improvement.	Documented impact assessment. Where the identification of impacts requires changes in current practices, in order to mitigate negative effects, a timetable for change should be developed.	Environmental impact assessment should cover the following activities, where they are undertaken: • Building new roads, processing mills or other infrastructure. • Putting in drainage or irrigation systems. • Replanting or expansion of planting area. • Disposal of mill effluents; • Clearing of remaining natural vegetation	Impact assessment may be a non-restrictive format e.g. ISO 14001 EMS and/or EIA report incorporating elements spelt out in this criterion and raised through stakeholder consultation.
5b. The status of rare, threatened or endangered species and high conservation value habitats, if any, that exist in the plantation or that could be affected by plantation or mill management, shall be identified and their conservation taken into account in management plans and operations.	Information should be collated that includes both the planted area itself and relevant wider landscape-level considerations (such as wildlife corridors). This information should cover: Presence of protected areas that could be significantly affected by the grower or miller. Conservation status (e.g. IUCN status), legal protection, population status and habitat requirements of rare, threatened, or endangered species that could be significantly affected by the grower or miller. Identification of high conservation value habitats, such as rare and threatened ecosystems, that could be significantly affected by the grower or miller. *If rare, threatened or endangered species, or high conservation value habitats, are present, appropriate measures for management planning and operations will include:* • Ensuring that any legal requirements relating to the protection of the species or habitat are met. • Avoiding damage to and deterioration of applicable habitats. • Controlling any illegal or inappropriate hunting, fishing or collecting activities; and developing responsible measures to resolve human-wildlife conflicts	This information gathering should include checking available biological records, and consultation with relevant stakeholders. A field study might be needed. For individual smallholders, a basic understanding of any applicable species or habitats, together with their conservation needs, will be sufficient.	Red Data lists on national government level IUCN status conservation
5c. Waste is reduced, recycled, re-used and disposed of in an environmentally and socially responsible manner.	Documented identification of all waste products and sources of pollution Safe disposal of pesticide containers. Having identified wastes, a waste management and disposal plan must be developed and implemented, to avoid or reduce pollution.	The waste management and disposal plan should include measures for: Identifying and monitoring sources of waste and pollution. Improving the efficiency of resource utilization and recycling potential wastes as nutrients or converting them into value-added products Appropriate disposal of hazardous chemicals and their containers.	
5d. Efficiency of energy use and use of renewable energy is maximized.	Monitoring of renewable energy use per ton of CPO or palm product in the mill. Monitoring of direct fossil fuel use per ton of CPO (or FFB where the grower has no mill).	Assessment of direct energy use of operations. This should include estimation of fuel use by contractors, incl. all transport and machinery operations. The feasibility of collecting and using biogas should be studied if possible	
5e. Use of fire for waste disposal and for preparing land for replanting is avoided except in specific situations, as identified in the ASEAN guidelines or other regional best practice.	Fire should be used only where an assessment has demonstrated that it is the most effective and least environmentally damaging option for minimizing risk of severe pest and disease outbreaks, and with evidence that fire-use is carefully controlled. Use of fire on peat soils should be avoided.		Guidelines for the implementation of the ASEAN policy on zero burning

5f. Plans to reduce pollution and emissions, incl. greenhouse gases, are developed, implemented and monitored	An assessment of all polluting activities must be conducted, incl. gaseous emissions, particulate/soot emissions and effluent. Significant pollutants and emissions must be identified and plans to reduce them implemented. A monitoring system must be in place for these significant pollutants which goes beyond national compliance. The treatment methodology for POME is recorded. Note: RSPO needs to address all issues relating to GHG emissions, as set out in the Preamble to this document.	Identification of significant emissions and pollutants. Availability of monitoring system Treatment for POME is recorded.	
6a. Aspects of plantation and mill management that have social impacts are identified in a participatory way, and plans to mitigate the negative impacts and promote the positive ones are made, implemented and monitored, to demonstrate continuous improvement.	A documented social impact assessment incl. records of meetings. Evidence that the assessment has been done with the participation of affected parties. A timetable with responsibilities for mitigation and monitoring, reviewed and updated as necessary Particular attention paid to the impacts of out-grower schemes (where the plantation includes such a scheme).	Social impacts to address in documentation include: • Access and use rights. • Economic livelihoods, working conditions. • Subsistence activities. • Cultural and religious values. • Health and education facilities. • Other community values	Protection of plantation workers: ILO Convention 110 (1958) Plantations, Art. 5-91
6b. There are methods for communication and consultation between growers and/or millers, local communities and other affected or interested parties.	Documented consultation and communication procedures. A nominated management official responsible for these issues. Maintenance of a list of stakeholders, records of all communication and records of actions taken in response to input from stakeholders.	Documentation of procedures and records Nominated responsible within company	
6c. There is a mutually agreed and documented system for dealing with complaints and grievances, which is implemented and accepted by all parties.	The system resolves disputes in an effective, timely and appropriate manner. Documentation of both the process by which a dispute was resolved and the outcome. The system is open to any affected parties.	Documented system for complaints	
6d. Any negotiations concerning compensation for loss of legal or customary rights are dealt with through a documented system that enables indigenous peoples, local communities and other stakeholders to express their views through their own representative institutions.	Establishment of a procedure for identifying legal and customary rights and a procedure for identifying people entitled to compensation. A procedure for calculating and distributing fair compensation (monetary or otherwise) is established and implemented. The process and outcome of any negotiated agreements and compensation claims is documented and made publicly available.	Processes and agreements are documented Establishment of documented system how to deal with negotiations	Fair representation and participation of indigenous and Tribal peoples: ILO convention 169 (1989) on indigenous and Tribal people (Art. 6-9) UN declaration on Rights of indigenous peoples (2007), various art. Convention on elimination of all forms of racial discrimination, International covenant on economic, social and cultural rights, InterAmerican Human rights system
6e. Pay and conditions for employees and for employees of contractors always meet at least legal or industry minimum standards and are sufficient to provide decent living wages	Documentation of pay and conditions. Labor laws, union agreements or direct contracts of employment detailing payments and conditions of employment are available in the languages understood by the workers or explained carefully to them by a management official. Growers and millers provide adequate housing, water supplies, medical, educational and welfare amenities to national standard or above, where no such public facilities are available or accessible (not applicable to smallholders).	Adequate facilities are provided Documentation of pay and conditions, also in local language	No forced labour: ILO convention 29 (1930) Forced labour, Article 5 ILO convention 105 (1957) Abolition of forced labour, Article 1.
6f. The employer respects the right of all personnel to form and join trade unions of their choice and to bargain collectively. Here the right to freedom of association and collective bargaining are restricted under law; the employer facilitates parallel means of independent and free association and bargaining for all such personnel.	A published statement in local languages recognizing freedom of association. Documented minutes of meetings with main trade unions or workers representatives	Statement and records of meetings	Freedom of Association and collective bargaining: ILO convention 87 (1948) Freedom of Association and Protection of right to organize, Art. 2-11 ILO convention 98 (1949) Right to

			organize and collective bargaining, Art. 1-4 ILO Convention 141 (1975) Rural worker's organizations, Art. 2-3 UN declaration of the right of indigenous peoples, Art. 3
6g. Children are not employed or exploited. Work by children is acceptable on family farms, under adult supervision, and when not interfering with education program. Children are not exposed to hazardous working conditions.	Documentary evidence that minimum age requirement is met. Only workers above the minimum school leaving age in the country or who are at least 15 years old may be employed, with the stated exception of family farms. The minimum age of workers will not be less than stated under national regulations.	Documentary evidence of minimum age (15 years or older – national regulations)	Protection of children: ILO convention 138 (1973) Minimum age, Art. 1-3 ILO convention 182 (1999) Worst forms of child labour, Art. 1-7 UN declaration of the rights of indigenous people (2007), Art. 17(2), 21, 22(2)
6h. Any form of discrimination based on race, caste, national origin, religion, disability, gender, sexual orientation, etc., is prohibited.	A publicly available equal opportunities policy incl. identification of affected groups in local environment. Evidence that employees and groups incl. migrant workers have not been discriminated against.	Publicly available policy Evidence of non-discrimination	Non-discrimination and equal remuneration: ILO Convention 100 (1951) Equal remuneration, Art. 1-3 ILO Convention 111 (1958). Discrimination, Employment and Occupation (Art. 1-2) UN Declaration of the Right of Indigenous peoples, various art. Just employment of migrants: ILO Convention 97 (1949) Migration for Employment, Art. 1-9 ILO Convention 143 (1975) Migrant workers (supplementary provisions), Art. 1-12
6i. A policy to prevent sexual harassment and all other forms of violence against women and to protect their reproductive rights is developed and applied.	A policy on sexual harassment and violence and records of implementation. A specific grievance mechanism is established.	Policy available + records of implementation Grievance mechanism is established	
6j. Growers and mills deal fairly and transparently with smallholders and other local businesses.	Current and past prices paid for FFB shall be publicly available. Pricing mechanisms for FFB and inputs/services shall be documented. Evidence shall be available that all parties understand the contractual agreements they enter into, and that contracts are fair, legal and transparent. Agreed payments shall be made in a timely manner.	Prices available Pricing mechanisms in place + evidence of implementations	Protection of smallholders: ILO Convention 117 (1962) on Social Policy (Basic aims and standards), Art. 4
6k. Growers and millers contribute to local sustainable development wherever appropriate.	Demonstrable contributions to local development that are based on the results of consultation with local communities.	Demonstrations available	
7a. A comprehensive and participatory independent social and environmental impact assessment (IA) is undertaken prior to establishing new plantings or operations, or expanding existing ones, and the results incorporated into planning, management and operations.	Independent IA, undertaken through a participatory methodology incl. external stakeholder groups. Appropriate management planning and operational procedures. Where the development includes an out-grower scheme, the impacts of the scheme and the implications of the way it is managed should be given particular attention.	IA available, incl. at least: Assessment of impacts of all major planned activities, incl. stakeholder consultation, of HCV that could be negatively affected. Assessment of potential effects on adjacent natural ecosystems of planned ecosystems Identification of watercourses + assessment of potential effects on hydrology by planned developments. Measures should be planned and implemented to maintain the quantity and quality of water resources.	

		Baseline soil surveys and topographic information, incl. the identification of marginal and fragile soils, areas prone to erosion and slopes unsuitable for planting. Analysis of type of land to be used, of of land ownership and user rights, of current land use patterns. Assessment of potential social impact on surrounding communities of a plantation	
7b. Soil surveys and topographic information are used for site planning in the establishment of new plantings, and the results are incorporated into plans and operations.	Soil suitability maps or soil surveys adequate to establish the long-term suitability of land for oil palm cultivation should be available. Topographic information adequate to guide the planning of drainage and irrigation systems, roads and other infrastructure should be available.	Availability of soil suitability maps and topographic information	
7c. New plantings since November 2005, have not replaced primary forest or any area required to maintain or enhance one or more High Conservation Values.	An HCV assessment, including stakeholder consultation, is conducted prior to any conversion. Dates of land preparation and commencement are recorded	HCV assessment Records incl. dates for land preparations	National Interpretation of the HCV criteria, or Global HCV Toolkit
7d. Extensive planting on steep terrain, and/or on marginal and fragile soils, is avoided.	Maps identifying marginal and fragile soils, including excessive gradients and peat soils, should be available. Where limited planting on fragile and marginal soils is proposed, plans shall be developed and implemented to protect them without incurring adverse impacts.	Soil maps available If planting on fragile soils > plans available for protection of them	National interpretation should consider including specific controls and thresholds as e.g. slope limits, soil types
7e. No new plantings are established on local peoples' land without their free, prior and informed consent, dealt with through documented system that enables indigenous peoples, local communities and other stakeholders to express views through their own representative institutions.	Refer to criteria 2.2, 2.3, 6.2, 6.4 and 7.6 for indicators and guidance		
7f. Local people are compensated for any agreed land acquisitions and relinquishment of rights, subject to their free, prior and informed consent and negotiated agreements.	Documented identification and assessment of legal and customary rights. Establishment of system for identifying people entitled to compensation. Establishment of a system for calculating and distributing fair compensation (monetary or otherwise). Communities that have lost access and rights to land for plantation expansion are given opportunities to benefit from plantation development. The process and outcome of any compensation claims should be documented and made publicly available. Activity to be integrated with SEIA (7.1).	Establishment of compensation systems Documentation and records available	Just land acquisition: ILO convention 169 (1989) on indigenous and Tribal peoples (Art 13-19) UN declaration on the Rights of indigenous peoples (2007) Art.25-26 UN Convention on biological diversity (1992), Art. 10C
7g. Use of fire in the preparation of new plantings is avoided other than in specific situations, as identified in the ASEAN guidelines or other regional best practice.	No evidence of land preparation by burning. Documented assessment where fire has been used for preparing land for planting. Evidence of approval of controlled burning as specified in ASEAN guidelines or other regional best practice. This activity should be integrated with SEIA required by 7.1.	No evidence of land burning except in few mentioned situations	
8a. Growers and millers regularly monitor and review their activities and develop and implement action plans that allow demonstrable continuous improvement in key operations	The action plan for continual improvement should be based on a consideration of the main social and environmental impacts and opportunities of the grower/mill, and should include a range of indicators covered by these principles and criteria. As a minimum, these must include, but not necessarily be limited to: • Reduction in use of certain chemicals (criterion 4.6). • Environmental impacts (criterion 5.1). • Waste reduction (criterion 5.3). • Pollution and emissions (criterion 5.6). • Social impacts (6.1).	Availability of action plan for continuous improvement	

RTRS, Roundtable on Responsible Soy (commodity)

General characteristics:	
Status:	The principles and criteria are available in draft version [35]
Geographical coverage:	International
Scope:	Soy value chain (production, trading, processing and manufacturing).
Initiator system:	RTRS was initiated by WWF Switzerland and Coop Switzerland. A first paper has been developed by ProForest in 2004 known as the so-called "Basel Criteria for Responsible Soy" [12].

Short summary system or initiative:	Extension system:	
	Principles included:	Y (draft)
	Criteria included:	Y (draft)
	Indicators included:	Y (draft)
Context:		
The Round Table on Responsible Soy Association is an international multi-stakeholder initiative that brings together those concerned with the impacts of the soy economy. It's working to define what responsibly-grown and processed soy is and to promote the best available practices to mitigate negative impacts throughout the value chain [35].		
Status of system:		
The principles and criteria are available in draft version. They are prepared by a so-called Development Group (DG) and revised based on various publication rounds. The 3rd public consultation round was closed on January 15, 2009. The DG consists of soy producers, industry and NGOs. The company Proforest is guiding the process [35].		
Planned activities:		
After a final round of public consultation, a field testing version will be presented to the General Assembly. After approval, soy producers of various sizes and countries will test the P&C and comment on their findings during a 12 month period. Following this, a revision will be made, resulting in the 1st version of the full RTRS P&C. Soy producing countries will be encouraged to make national interpretations of the P&C which will be, after endorsement by the RTRS, become the basis of certification in that country [36].		

Structure system or initiative:	
Juridical basis	Voluntary. RTRS members will need to comply with P&C.
Participation:	Principles are developed through multi-stakeholder dialogue. *Standard setting procedure:* A development group is established to develop a set of standards for responsible soy value chains. The DG is composed of representatives of three constituencies (producers; Industry, Trade & Finance and Civil Society) having equal weight and number of votes. DG proposals are sent out for public consultation and to be approved by the General Assembly and Board [35]. This process is described in the ToR of the DG group [37].
Local stakeholder involvement	Dialogue with stakeholders and local communities included in criterion 3
Monitoring performance:	*For operation-specific improvement [38]:* Generally the auditors monitor every year and expect to see improvement on any corrective actions they have requested as part of the continuous improvement. In schemes such as FSC (as example) there is an annual monitoring report made available publicly for each operation. *For overall impact [38]:* RTRS has not (yet) put in place any monitoring of impacts / results of their scheme, or collection of standardized data.
Chain of custody system	As currently proposed: segregation and mass balance. Book and claim is not ruled out and this approach will be monitored and tested during field testing phase and recognized if appropriate [39].
Level of detail CoC system:	Existing mechanisms for implementation of segregation and mass balance CoC from other sectors will be adopted and used. Rules for control of claims and use of logo will be developed.

	In debate: will CoC holders or supply chain members purchasing or trading soy be required to be a RTRS member? Advantage: all actors participating in the chain need to comply with criteria. Disadvantage: possible barrier to participation because all parties need to be member and pay a membership fee [39].

Further information on:	
Removal of trade barriers	
Costs:	Proforest indicates (based on experiences from other schemes) [38]: Generally the producers need to cover the costs of an audit team to visit their operation (usually at least 2 people; time needed depends on the size of the operation). Costs are also influenced by whether the auditors are local or not (travel costs being correspondingly higher). Auditors charges vary between countries and certifiers: indication of at least 300 US$ a day. There can be additional time for report writing or pre-audit consultation. There is usually a re-audit annually, and often an annual certification / accreditation fee.

List of principles included [36]:	
1	Legal Compliance and Good Business Practice
2	Responsible Labor Conditions
3	Responsible Community Relations
4	Environmental responsibility
5	Good Agricultural Practice

List of criteria and indicators [36]:

Criteria	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
1a. There is awareness of, and compliance with, all applicable local and national laws.	* Producer can demonstrate awareness of his or her responsibilities, according to applicable laws. * Applicable laws are being complied with.		
1b. Legal use rights to the land are clearly defined and demonstrable.	* Documented evidence of rights to use the land (e.g. ownership document, rental agreement, court order etc)		
1c. There is open and transparent engagement with interested parties *(optional, possibly to be removed)*	* Engagement with local actors and stakeholders. * Continuous improvement on divulging social and environmental information relevant to the RTRS standard.		
2a. Do not engage in or support child labor or forced labor, or engage in or support discrimination or harassment.	* No forced, bonded, trafficked or otherwise involuntary labor is used at any stage of production. * No workers of any type are required to lodge their identity papers with anyone and no part of their salary, benefits or property is retained in order to coerce workers. * Spouses and children of contracted workers are not obliged to work on the farm. * Children and minors (below 18) do not conduct hazardous work or any work that jeopardizes their physical, mental or moral well being. * Children under 15 (or higher age as established in national law) do not carry out productive work. They may accompany their family to the field as long as they are not exposed to hazardous, unsafe or unhealthy situations. * There is no engagement in, support of or tolerance of any form of discrimination which annuls or affects the recognition, fruition or equal exercise of rights or liberties at work. * All workers receive equal remuneration for work of equal value, equal access to training and benefits and equal opportunities for promotion and to fill all positions open. * Workers are not subject to corporal punishment, mental or physical oppression and coercion, verbal or physical abuse, sexual harassment or any other kind of intimidation.		ILO Convention 29 on Forced Labor and 105 on Abolition of Forced Labor Ref. ILO Convention 138 on Minimum Age and 182 on Worst Forms of Child Labor Ref: ILO Convention 111 on Discrimination and ILO Convention 100 on Equal Remuneration.
2b. All workers, sharecroppers, contractors, and subcontractors are adequately informed and trained for their tasks and are aware of their rights and duties.	* Labor laws, union agreements or direct contracts of employment detailing payments and conditions of employment (e.g., working hours, deductions, overtime, sickness, holiday entitlement, maternity leave, reasons for dismissal, period of notice, etc) are available in the languages understood by the workers or explained carefully to them by a management official. * Adequate and appropriate training and comprehensible instructions on fundamental rights at work, health and safety and any necessary guidance or supervision are provided to all workers.		
2c. A safe and healthy workplace is provided for all workers.	* There is a health and safety policy which applies to all workers and is adequately implemented and monitored. * Relevant health and safety risks are identified and procedures are developed to address these risks by employers and these are monitored. * Immediate steps are taken to stop any operation where there is an imminent and serious danger to safety and health and to evacuate as appropriate. * Potentially hazardous tasks are only carried out by capable and competent people who do not face specific health risks.		Ref: ILO convention 155 on Occupational Safety and Health; ILO Convention 184 on Safety and Health in Agriculture; ILO Recommendation 192 on Safety and Health in Agriculture

	* Adequate and appropriate protective equipment is provided and used to cover all potentially hazardous operations such as pesticide application, land preparation and harvesting. * The necessary precautions are taken to avoid people entering into recently sprayed areas. * Accident and emergency procedures exist and instructions are clearly understood by all workers. * There is access to medical assistance and compensation in case of work-related disease or injury.		
2d. Workers have freedom of association and rights of collective bargaining.	* All workers and sharecroppers have the right to establish and/or join an organization of their choice. * Effective functioning of such organizations is not impeded. Representatives are not subject to discrimination and have access to their members in the workplace. * All workers have the right to perform collective bargaining * Workers are not inhibited from interacting with external parties (e.g. NGOs, trade unions labor inspectors, agricultural extension workers, etc)		Ref. ILO Convention 87 on Freedom of Association and Protection of the Right to Organize. Ref. ILO Convention 98 on Right to Organize and Collective Bargaining.
2e. All workers, employed directly or by major service providers, receive remuneration that is sufficient to meet basic needs.	* Remuneration: Workers are paid gross wages that comply with national legislation and sector agreements and are sufficient to meet basic needs. * Remuneration: Deductions from wages for disciplinary purposes are not made. Wages and benefits are detailed and clear to workers and workers are paid in a manner convenient to them. Paid wages are recorded by the employer. * Normal weekly working hours do not exceed 48. * If additional overtime hours are necessary: a) This will only be allowed in exceptional and unforeseen circumstances. b) All workers must agree to overtime. c) The farm can have only two exceptional periods per year. d) The farm must make sure that the average of working hours in the two-month period after the start of the exceptional period is still no more than 60 hours per week. * Working hours per worker are recorded by the employer. * Overtime work must at all times be voluntary and paid according to legal or sector standards. In case overtime work is needed, workers shall receive timely notification. Workers shall be entitled to at least one day off every seven-day period. * Salaried workers shall have all entitlements and protection in national law and practice with respect to maternity. Workers taking maternity leave shall be entitled to return to their employment on the same terms and conditions that applied to them prior to taking leave and they shall not be subject to any discrimination, loss of seniority or deductions of wages. * If workers are paid per unit/result (piece work), a normal 8 hour working day should allow workers, (men and women), to earn at least the national or sector established minimum wage and be sufficient to meet basic needs. * If employees live on the central production or processing site(s), they have access to affordable and adequate housing and food.		Ref: ILO Convention 131 on Minimum wage fixing convention. Ref. ILO Convention 1 on Hours of Work
3a. Traditional communities affected by expansion of soy bean areas are compensated for any relinquishment of rights (including traditional land use rights), subject to their free, prior, informed and documented consent.	* A comprehensive, participatory and documented social and environmental assessment has been carried out (as per Criterion 4) *Documented evidence of compensation and free prior informed consent for relinquishment of rights		
3b. A dialogue is established with local	* Documented evidence of the dialogue	Verifier: Records of	

communities and a procedure is in place to address complaints and grievances.	* A complaints and grievances mechanism which includes a compensation mechanism for damages incurred by the community as a result of the agricultural activities, and a timeframe for resolution of the complaint/grievance.	complaints/grievances Verification: Interviews with representatives of local communities would be important	
3c. Preference is given to the employment and training of the local population, and to the contracting of services and purchasing inputs in the local market, as a means to promote community development.	* Documentation/demonstration that there is a policy to favor hiring locally, and that this has been implemented. * Documentation of % of employment of local people who originate from the area. Adequate justification if local hiring has not taken place. * Demonstrate that purchasing policies favor local procurement of services and inputs, and (if necessary) provide adequate justification where this has not taken place.		
4a. On and off site impacts (both positive and negative, both social and environmental) of new infrastructure have been assessed and appropriate measures taken to minimize and mitigate any negative impacts.	* A risk assessment is carried out prior to the establishment of new infrastructure. * The assessment carried out in a comprehensive, participatory and transparent manner.		
4b. Pollution is minimized and production waste is managed responsibly.	* No burning of crop residues or waste. * Possible indicators: a) Adequate storage of fuel, batteries and tires, b) Adequate facilities for rinsing mechanical equipments, c) Toxic waste should be checked carefully.		
4c. Efforts to reduce emissions of Greenhouse gases are made.	* Monitoring of trends of direct fossil fuel use, per unit of production over time. * Monitoring of trends of carbon incorporation into soil (organic material in soil) *Indicators in further development*		
4d. Habitats for rare, threatened or endangered native or endemic species are maintained and safeguarded.	* The existence of mapping or planning to identify habitats of rare, threatened or endangered native or endemic species * Maintenance of native vegetation according to the mapping that was carried out. * Existence of monitoring system		
4e. Expansion for soy cultivation takes place on land cleared of native vegetation before 2008 / date of publication (still optional)	* Status of the area at the cut off date * Proof that the area is inside the limits of an agricultural expansion zone in an official land use plan, which was subject to a participatory process. * Proof that HCVA's have not been converted. * Soy expansion preferentially takes place on existing underutilized cleared land e.g. degraded pastures.	Guidance: "outside areas identified as HCVA" includes areas where an assessment has not yet been made.	
4f. Impacts (both positive and negative, both social and environmental) of expansion for soy cultivation have been assessed and appropriate measures taken to minimize and mitigate any negative impacts.	Risk assessment is carried out prior to the expansion.		
5a. The quality of surface and ground water is maintained or improved.	* Practices are implemented to minimize impacts on water quality from chemical residues, fertilizers, erosion or other sources * There is monitoring – appropriate to scale – to demonstrate that the practices are effective	Where appropriate there should be monitoring of parameters such as pH, temperature, dissolved oxygen, turbidity. National interpretations should provide information on how this monitoring can be carried out.	In some places basic analysis kits are available for parameters such as pH, dissolved oxygen, nitrogen and phosphorus. They do not include more complex chemicals such as some pesticide residues – especially modern pesticides.
5b. The efficiency of water use for irrigated soy production is optimized	* The farmer can provide a plan or other document indicating that irrigation being used is following best practice for irrigation * Irrigation is not having a negative impact on water quantity * If ground water is used for irrigation then the groundwater level is being		

	monitored		
5c. Natural vegetation areas around springs and along natural watercourses are maintained or reestablished.	* The location of all watercourses has been identified and mapped and the status of the riparian vegetation is known by the producer. * Where natural vegetation in riparian areas has been removed there is a plan with a timetable for restoration which is being implemented		
5d. Soil quality is maintained or improved and erosion is avoided by good management practices.	* There is a soil quality (physical, chemical and biological) and erosion management plan – appropriate to the location and scale of production – which is being implemented. * Monitoring – appropriate to scale of production – is in place. * Producers must demonstrate knowledge of techniques to maintain soil fertility and must be implementing this in practice. Suggestions monitoring indicators include • Analysis of organic matter, total Nitrogen, Phosphorous, • Measurement of surface residues – quality and quantity 30 days before mean sowing date with a tolerance of +\- 10 days	The management plan should include issues such as: • road management • management of sloping areas • fragile soils Indicators need to be based on the key issues for production and region – this must be addressed through national interpretation	
5e. Systematic, recognized Integrated Pest Management (IPM) techniques, including biological control, to monitor, prevent and control pests, crop diseases and weeds are adopted.	* There is a plan for IPM and the plan is implemented. * Chemical use follows professional recommendations for agrochemicals (or, if professional recommendations are not available, then manufacturer's recommendations). * Maintenance of records of monitoring of pests, diseases, weeds and chemical use.		
5f. All application of chemicals is documented and all handling, storage, collection and appropriate disposal of chemical waste and empty containers, is monitored to ensure compliance with good practice.	* Containers are stored, and disposed of properly. * Containers are washed using triple rinsing principles and water properly disposed of. * Transportation of chemicals is safe. * Fertilizers are used in accordance with professional recommendations (provided by manufacturers where other professionals are not available).		
5g. Chemicals listed in the Stockholm and Rotterdam Conventions or in the Pesticide Action Network (PAN) Dirty Dozen will not be used.	There is adequate knowledge about which chemicals can and cannot be used.		Stockholm and Rotterdam Conventions Pesticide Action Network (PAN) Dirty Dozen
5h. Document monitor and control the use of biological control agents in accordance with national laws and internationally accepted scientific protocols.	* There is adequate information about requirements for use of biological control agents. * Adequate records are kept of all use of biological control agents.		
5i. Systematic measures are planned and implemented to monitor, control and minimize the spread of invasive introduced species and new pests.	* There is a system to identify any invasive introduced species or new pests. * If such species or pests are identified there are measures in place to minimize spread. * Any incidence should be reported to the proper authorities.		
5j. Appropriate measures are implemented to prevent the drift of agrochemicals and genetic material to neighboring areas.	* All application of chemicals shall follow good agricultural practice and shall be conducted only under weather conditions that minimize drift to adjacent areas. * No aerial application of hazardous chemicals within 500m of populated areas or water bodies. * Where a neighbor is producing a type of crop where contamination is an issue, the producer takes adequate measures to prevent any contamination. * Harvesters take measures to ensure there is no contamination when moving between farms.		
5k. Control of the origin of seeds as a measure for the prevention of introduction of new diseases.	* All purchased seed must come from certified sources. * For small producers self-propagated non-certified seeds are permitted for their own use provided appropriate seed production norms are followed.		

Better Sugarcane Initiative Ltd (commodity)

General characteristics:	
Status:	Theoretical development
Geographical coverage:	International
Scope:	BSI addresses sugar production in the field and processing issues in the mill and – as appropriate- further processing to ethanol and other by-products.
Initiator system:	Funded by its members.

Short summary system or initiative:	Extension system:	
BSI is a global multi-stakeholder non-profit initiative dedicated to reducing the environmental and social impacts of sugar cane production. It aims to achieve this with a Standard that measures these impacts accurately, and with the development of a system to certify that sustainable practices are being adhered to [40].	Principles included:	Y (draft)
	Criteria included:	Y (draft)
	Indicators included:	Y (draft)
Context:		
Status of system:		
A first standard on principles and criteria was published for public consultation on 10 February 2009 [41]. Technical working groups (TWGs) will develop guidelines on good practice achievement which are universally applicable and are for consideration by BSI membership [40]. The second version of BSI principles was published end of 2009 [40]. [42] mentions: In first instance, the standard is developed by engineers, explaining the objective system combined with metric indicators. Also because of the complexity of the system (sugar produced in industrial and in developing countries). As long as a reporting scheme is requested: metric indicators have an advantage. When aiming for a global standard, metric indicators are more complicated due to strict requirements of quantitative indicators for various regions.		
Planned activities:		
The draft standard was out for public consultation and further finalized in summer 2009. The guidelines will be tested in different cane-growing scenarios. The first pilots started in summer 2009 [40]. Phase 2 of the public consultation ended in January 2010.		

Structure system or initiative:	
Juridical basis:	Voluntary initiative. Members of the BSI need to meet the BSI principles and criteria.
Participation:	Multi-stakeholder dialogue. BSI is following the ISEAL Code of Good Practice for Setting Social and Environmental Standards. TWGs are established on Environment and agronomy (9), Social and community (9) and Milling and co-products (8) [40]. Public consultation rounds are planned for consultancy.
Local stakeholder involvement	Included in criteria: consultation plan to consult stakeholders on possible negative impacts due to sugarcane production and processing (principle 4)
Monitoring performance:	
Chain of custody system	Not discussed yet.
Level of detail CoC system:	

Further information on:	
Removal of trade barriers	
Costs:	

List of (draft) principles included [41]:	
1	Obey the Law.
2	Respect Human Rights and Labor Standards
3	Manage input, production and processing efficiencies to enhance sustainability
4	Actively manage biodiversity and ecosystem services
5	Commit to continuous improvement in key areas of their business

List of criteria and indicators [43]:

Criteria	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
1a. To comply with relevant applicable laws	Relevant national laws and international conventions complied with. Note: A list of relevant international conventions is included in Appendix 2. The more strict regulation or ratified convention - national or international – should prevail unless otherwise specified. The other criterion and indicators in this standard provide some guidance for defining the relevant laws.	Yes/no	
1b. To demonstrate clear title to land in accordance with national practice and law.	The right to use the land can be demonstrated and is not legitimately contested by local communities with demonstrable rights.	Documents showing legal ownership or lease of the land. Yes/no	Those rights can be related either to legal ownership or lease of the land or to customary rights. Legal ownership shall be the official title in the country (e.g. notary, government agency or other). Guidance for customary rights is provided in ILO conventions 169 and 117.See also Criterion on participation and Criterion on Environmental and Social Impact Assessment 5.7.
2.1 To comply with ILO labour conventions governing child labour, forced labour, discrimination and freedom of association and the right to collective bargaining.	Minimum age of workers	18 for hazardous work 15 for non-hazardous work	Definition of Child labour in Appendix 1 & Appendix 2 (Convention 138 and C182).As per ILO Art 3 C 138 and C182, the minimum age for admission to any type of employment or work which by its nature or the circumstances in which it is carried out is likely to jeopardize the health, safety or morals of young persons shall not be less than 18 years (see also art 16, Convention 184 Health and Safety in Agriculture). Work by children on family small holdings is only acceptable under adult supervision and when work does not interfere with the child's schooling and does not put at risk his or her health. Forced or compulsory labour as defined per ILO Convention 29 and ILO 105. The major forms of forced or compulsory labour are defined in Appendix 1. Verification shall address all male and female workers. Discrimination as defined by ILO C111 (see full definition in Appendix 1). Verification to be done by interviewing workers
	Absence of forced or compulsory labour	Yes/No	
	Absence of discrimination		
	Respect the right of all personnel to form and join trade unions of their choice and/or to bargain collectively in accordance with the law.		
2.b To apply BSI human rights and labour standards to suppliers and contractors.	Percentage of major suppliers and contractors who have demonstrated compliance with human rights and labor standards	Verifier: 95%	Labour contractors and major suppliers to the mill and to cane growers shall demonstrate compliance with basic human rights (e.g. no forced labour, no child labour, no discrimination, freedom of association and association and the right to collective bargaining. Effective compliance will be verified by auditors by sampling at mill and farm level. Sampling method based on volume provided by supplier to the mill

2c. To provide a safe and healthy working environment in work place operations.	Los time accident frequency	Number per million hours worked. Mill < 15, Agriculture < 45	ILO Convention 184 on safety and health in agriculture (art. 7-21)
	Assessment of the main health and safety risks and measures implemented for mitigation of risk	Yes/No	
	Appropriate personal protective equipment supplied to and used by all workers.	Yes/No	
	Training for health and safety	90%	
	Availability of sufficient safe drinking water to each worker present on the field and/or mill.	Yes/No	
	Access to first aid and provision for emergency response.	Yes/No	
2d. To provide employees and workers (including migrant, seasonal and other contract labor) with at least the national minimum living wage.	Ratio of lowest entry level wage including benefits to minimum wage and benefits required by law.	Verifier: $/$. Standard >= 1	ILO C131 (minimum wage fixing)
2e. To provide clear, equitable and comprehensive contracts.	Existence of a contract or equivalent document	Verifier: 100%	
3a. To monitor production and process efficiency; to measure the impacts of production and processing so that improvements are made over time.	Total raw materials used per kg product	Kg/kg <11 if no ethanol produced; < 20 for full ethanol production	
	Sugarcane yield	Verifier: t C/ha harvested / year. Standard values depend on whether rain fed or irrigated. Value for reporting period or 5 year rolling average.	
	Working hours lost as percent of total hours Worked	Verifier: <5% (this represents working hours lost through absence)	
	Mill overall time efficiency	Verifier: 75% Processing time as percentage of total time. Value for reporting period or 5 year rolling average.	
	Factory performance index	Verifier: 90% Used if sugar and not ethanol is produced.	
	Industrial efficiency	Verifier: 75% Used only if sugar and ethanol are produced in same mill.	
3b. To monitor climate change impacts.	Global warming burden per unit mass product	t CO2 /t sugar. Standard: Total <0.4 Field to gate emissions	
		Total < 29 g CO2 eq/MJ (only used if ethanol is produced).	
4a. To assess direct and indirect impacts of sugarcane enterprises on biodiversity and ecosystems services.	Aquatic oxygen demand per unit mass product	1 kg COD or 0.5 kg BOD(5)	Control or eliminate use of dangerous chemicals and pesticides: Stockholm Convention on Persistent organic pollutants (art.1-5) FAO International Code of Conduct on the Distribution and use of pesticides (art.5) Rotterdam Conventions on prior and informed consent procedure…" (art. 1,5 and 6)
	Percent of areas defined internationally or nationally as legally protected or classified as High Conservation Value areas (interpreted nationally and officially as described in Appendix 1) planted to sugarcane after the cut off date of 1 January 2008. Also includes soils with a large	0%	

	risk of significant soil stored carbon such as peat lands, mangroves, wetlands and certain grasslands.		Ramsar Convention on Wetlands World Heritage Convention concerning the protection of the World cultural and natural heritage Convention on biological diversity
	Existence and implementation of an environmental management plan (EMP) taking into account endangered species, habitats and ecosystems as well as reference to ecosystem services and alien invader plant and animal control, see also Appendix 4.	90%	
	Use of co-products does not affect traditional uses (e.g. fodder, natural fertilizer, local fuel) or affect the soil nutrient balance or SOM)	Yes/No	
	Soil and leaf nutrient status	> 80% (% field fertilized based on soil or leaf analysis)	
	Nitrogen and phosphorus fertilizer (calculated as phosphate equivalent) applied per hectare per year	< 120 kg / ha / year	
	Herbicides and pesticides applied per hectare per year	5 kg active ingredient / ha / year	
4b. To implement measures to mitigate adverse impacts where identified	Documented plan and implementation of mitigation measures	Yes/No	
5a. To train employees and other workers in all areas of their work and develop their general skills.	Training expense as percentage of payroll expense	Verifier: in %. Standard = 1	
5b. To continuously improve the status of soil and water resources	Net water consumed per unit mass of product	Mill, 20 kg/kg sugar or 30 kg/kg ethanol. Agric <50 kg/kg cane	Ref. SOC: S. Afr. Sugar Technological assistance (2008) 81: 324-332
	% Ground cover of tops or leaves after harvest	> 20%	
	Soil surface mechanically tilled per year (% of area under cane)	< 20%	
	Percent fields with samples showing analyses within acceptable limits for pH.	> 80%. Sampling at least one per crop cycle.	
5c. To continuously improve the quality of sugarcane and products from the sugar mill.	Theoretical recoverable sugar content of cane	10%	
	Fermentable total sugar content of cane, expressed as invert (TSAI)	120 kg / t cane.	
5d. To promote energy efficiency	Total net primary energy use per kg product	Total < 2500 kJ / kg	
	Energy used in cane transport per ton cane transported	< 50 MJ / t cane	
	Primary energy use per ton of sugarcane	< 300 MJ / t	
5e. To reduce emissions and effluents. To promote recycling of waste streams where practical.	Atmospheric acidification burden per unit mass product	< 5 kg/t	
	Non-hazardous solid residues per ton cane	< 1.0 t / t cane	
5f. To foster effective and focused research, development and extension expertise.	Research and extension costs as % of sales	> 0.5%	
5g. For greenfield expansion or new sugarcane projects, to ensure transparent, consultative and participatory processes that address cumulative and induced effects via an environmental and social impact assessment (ESIA).	Compliance as recognized EISA	Yes/No	
	High Conservation Value areas (interpreted nationally as described in Appendix 1) used as a % of total land affected by a new project or an	0%	

	expansion. Cut-off date 1 January 2008. NB This indicator duplicated in 4.1.2 but here it includes HCV categories 5 and 6. Also includes soils with a large risk of significant soil stored carbon losses such as peat lands, mangroves, wetlands and certain grasslands		
5h. To ensure active engagement and transparent, consultative and participatory processes with all relevant stakeholders.	Existence of a recognized grievance and dispute resolution mechanism for all stakeholders	Yes/No	
	Percentage of meetings of stakeholder engagement where agreement has been reached by consensus driven process	90%	
5i. To promote economic sustainability	Value added / tonne cane	$ / tonne cane. Mill > 4, Agriculture > 2	

CCCC/4C Common Code for the Coffee Community (commodity)

General characteristics:	
Status:	In implementation
Geographical coverage:	Worldwide
Scope:	Coffee
Initiator system:	Gesellschaft für Technische Zusammenarbeit (GTZ) and Deutschen Kaffeeverband (DKV) in 2002

Short summary system or initiative:	Extension system:	
The 4C Association is based on a voluntary Code of Conduct comprising basic social, environmental and economic practice in coffee production, processing and trading. The 4C Code is designed to trigger a process of continuous improvement towards increasing sustainability. Criteria are based on a traffic light system (red-yellow-green) [44]	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Y
Context:		
Status of system:		
In implementation		
Planned activities:		
-		

Structure system or initiative:	
Juridical basis:	Code of Conduct: Voluntary self-commitment [12].
Participation:	Members form 3 equal groups of producers, trading and civil society (NGOs and labor union). Participation for standard setting by stakeholders of the coffee chain and beyond (producers, trading and civil society [12].
Local stakeholder involvement	NGOs support the self-assessment and the development of the management plan of the potential candidate [12].
Monitoring performance:	Monitoring verification bodies: Unannounced random audits at al levels over a two-year period [12]. Depending on criteria (e.g. rating, the number of suppliers and the volume traded/ number of containers) the frequency of the regular verification will be defined. In general, there are two options, after 3 years, but no more than 5 years after the previous verification.
Chain of custody system	Principle 6 (economic dimension) has as indicator (for most preferred 'green' criterion [45]: • 4C Compliant Coffee is clearly identified, segregated, stored and protected from being mixed with other sources. • Written documents are available and operational
Level of detail CoC system:	Verifier is an approved and registered third-party. Verification: unannounced random audits. Renewal of certificate every 4 years. Verification report is not published [12].

Further information on:	
Removal of trade barriers	Joining 4C implies clear responsibilities for trade and industry members, who cover not only verification costs but also contribute 30% - 70% of their membership fees to 4C Support Services. 4C's roaster members commit to buying increasing amounts of coffee from verified producers over time and report on these amounts on an annual basis. Roasters may communicate their engagement to sustainability via a membership statement on their packaging [44].
Costs:	-

List of principles included [45]:	
Social dimension:	
1	Workers and producers have the right to found, to belong to and to be represented by an independent organization of their choice.
2	Workers have the right to bargain collectively
3	Equal rights with respect to gender, maternity, religion, ethnicity, physical conditions and political views are secured.
4	Children have the right to childhood and education.
5a	Workers receive a labour contract.
5b	Working hours comply with national laws / international conventions and/or collective bargaining and overtime work is remunerated.
5c	Wages comply with national laws or sector agreements.
5d	Employer assures proper occupational health and safety conditions for workers.
5e	Seasonal and piece rate workers are equitably treated.
6	Business Partners and workers within the 4C Unit receive trainings to improve their skills and capacities
7	4C Units work towards improving living conditions and support the basic education of Business Partners and workers.
Environmental dimension:	
1	Conservation of biodiversity, including protected or endangered native flora and fauna is supported.
2a	Use of pesticides is minimized.
2b	Harmful effects of pesticides and other chemicals used on human health and the environment are minimized.
3	Soil conservation practices are in place
4a	Fertilizers are used appropriately.
4b	Organic matter management is in place.
5a	Water resources are conserved.
5b	Wastewater management is in place.
6	Safe waste management is in place.
7a	Preferential use of renewable energy.
7b	Saving Energy
Economic dimension	
1	Market information is accessible within the 4C Unit.
2	4C Unit improves the ability of producers to gain adequate market access, including market information, financial credit, supply of inputs, etc
3	Coffee quality is monitored within the 4C Unit.
4	Record keeping used to monitor production efficiency leads to improved farm performance.
5	Transparent pricing mechanisms are available to reflect coffee quality and sustainable production practices.
6	Mechanisms for internal (within the 4C Unit) traceability are in place.

Information about criteria and indicators can be found in:

http://www.4c-coffeeassociation.org/downloads/about4c/4CDoc_001a_CodeofConduct_v1.2_en.pdf

Roundtable on Sustainable Biofuels RSB (biofuels)

General characteristics:	
Status:	Theoretical development
Geographical coverage:	International Meta standard
Scope:	Biofuels from a wide range of biomass sources
Initiator system:	RSB is an initiative of the EPFL Energy Center. The Roundtable's multi-stakeholder Steering Board has been responsible for overseeing this standards drafting process, according to the ISEAL Alliance Code of Good Practice for Standard Setting [46]

Short summary system or initiative:	Extension system:	
The Roundtable on Sustainable Biofuels is an international initiative bringing together farmers, companies, non-governmental organizations, experts, governments, and inter-governmental agencies concerned with ensuring the sustainability of biofuels production and processing [46].	Principles included:	Y (draft)
	Criteria included:	Y (draft)
	Indicators included:	N (key requirements are given)

Context:

Initiative is started as a response on growing concerns on sustainability of biofuels.

Status of system:

In June 2007, the Steering Board of the RSB published draft principles for sustainable biofuels production, as the basis for a global stakeholder discussion around requirements for sustainable biofuels. Interested stakeholders were invited to join Working Group and suggest criteria for achieving these principles, as well as rewording for the draft principles themselves. In 2008, stakeholders have discussed the criteria in about fifty Working Group and Expert Group teleconferences; four in-person stakeholder meetings; on-line via the Bioenergy Wiki; and via direct e-mails and phone calls to the Secretariat. The resulting draft standard – principles and criteria, along with key elements of the guidance for implementation – was presented early 2009 [47]. Beginning 2010, RSB published "Version One" of its Principles and Criteria. These are now eligible for pilot testing.

Early 2009, a new governance system was introduced: 11 chambers are introduced, each representing a stakeholder group. These Chambers will each elect two members into a new Standards Board, who will make all of the decisions regarding the RSB strategy, any changes to the standards, and approve the various options for certification, with decisions made via consensus [46].

RSB has published various reports including guidelines on various sustainability principles. These reports are published on the website and cover e.g. topics on:

- Food security
- Water
- Indirect land use change

The documents can be found on: http://cgse.epfl.ch/page65660-en.html

Planned activities:

Activities for 2009 / 2010 are:
i) Develop a Business/Strategic Plan, ii) Transition to the new governance system, Implement Version One, v) Chain of Custody (CoC) Research, vi) Create certification system, vii) Manage RSB participant communication, viii) Collaborate with key stakeholders, ix) Manage the RSB for growth

Structure system or initiative:	
Juridical basis:	Voluntary
Participation in system:	Participation from stakeholder groups on the principles via meetings, website, teleconferences and working groups [46]. The standards drafting process is according to the ISEAL Alliance Code of Good Practice for Standard Setting. The 11 Chambers each elect two members into a new Standards Board.
Local stakeholder involvement	Principle 2 covers various aspects to ensure stakeholder consultation in development and implementation of biofuel projects [46].
Monitoring performance:	
Chain of custody system	As decided in September 2008, the Board will develop a certification

	system, based on the idea of a 'meta-standard' system, which relies on existing certification and standards schemes to assure that most RSB principles are met. No decision made yet on the CoC. A working group on implementation issues is established [46].
Level of detail CoC system:	Not available yet.

Further information on:	
Removal of trade barriers	
Costs:	

List of principles included [48]:	
1	Biofuel operations shall follow all applicable laws and regulations.
2	Sustainable biofuel operations shall be planned, implemented, and continuously improved through an open, transparent, and consultative Environmental and Social Impact Assessment (ESIA) and an economic viability analysis.
3	Biofuels shall contribute to climate change mitigation by significantly reducing lifecycle GHG emissions as Compared to fossil fuels.
4	Biofuel operations shall not violate human rights or labor rights, and shall promote decent work and the well-being of workers.
5	In regions of poverty, biofuel operations shall contribute to the social and economic development of local, rural and indigenous people and communities.
6	Biofuel operations shall ensure the human right to adequate food and improve food security in food insecure regions.
7	Biofuel operations shall avoid negative impacts on biodiversity, ecosystems, and other conservation values.
8	Biofuel operations shall implement practices that seek to reverse soil degradation and/or maintain soil health.
9	Biofuel operations shall maintain or enhance the quality and quantity of surface and ground water resources, and respect prior formal or customary water rights.
10	Air pollution from biofuel operations shall be minimized along the supply chain.
11	The use of technologies in biofuel operations shall seek to maximize production efficiency and social and environmental performance, and minimize the risk of damages to the environment and people.
12	Biofuel operations shall respect land rights and land use rights.

List of criteria and indicators:

Criteria	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
1. Biofuel operations shall comply with all applicable laws and regulations Of the country in which the operations occur and with relevant international laws and agreements.	1.a.i1 The Operator demonstrates an awareness of The applicable national laws and Regulations and International laws and agreements. 1.a.i2 There is no evidence of systematic or major Non compliance with any applicable laws and regulations. 1. a.i 3 There is no evidence of systematic or major Non compliance with any international laws or agreements. 1.a.i4 Where applicable, the Operator is in compliance with the Terms of issue of operating permits. Where the terms of the permit have been audited by an internal or external auditor (e.g., Health and safety audits, waste management audits, air permit audits, building code audits, etc) are no systematic or major violation which remains unresolved. *For non small-scale Operators only:* 1.a.5 There is an effective procedure for familiarizing staff with Applicable laws and other regulatory requirements, and updating Staff when there are changes. 1.a.i6 All personnel, including contractors, demonstrate a working Knowledge of relevant codes of practice, operational guidelines and other accepted norms or agreements relevant to their responsibilities. 1.a.i7 The Operator can demonstrate that they have effective procedures in place to ensure that contractors and others responsible for operations on the property comply with applicable legal requirements.		
2a. Biofuel operations shall undertake an Environmental and Social Impact Assessment (ESIA) to assess impacts and risks and ensure Sustainability through the development of Effective and efficient implementation, mitigation, monitoring and evaluation plans. *Minimum requirements:* • Where an impact assessment is required by national, regional, and/or local laws, the process shall be integrated with the RSB process to avoid duplication of efforts, but the higher and more comprehensive standard shall be applied. • Operators shall refer to and comply with the relevant aspects of the RSB ESIA guidelines and toolkits as determined by the scale and Intensity of the operations. • A screening exercise shall be required for all new and existing operations and extensions to operations, of all sizes to determine whether a full ESIA or Rapid Environmental or Social Assessment (RESA) is required. • The screening exercise shall be done in accordance with the RSB screening guidelines. • The ESMP as described in the RSB ESIA guidelines shall be required for all operations and shall ensure compliance with all RSB principles and criteria. Where there are progress requirements, they shall be detailed. • The ESIA shall be carried out using independent and qualified professionals. Local experts shall be used to undertake the specialist social impact survey of the RSB ESIA together with the accredited professionals, to ensure that local customs, languages, practices and indigenous knowledge are respected and utilized in the ESIA process.	2.a.i1 Baseline surveys have been completed in accordance with Existing RSB guidelines on the social, economic and environmental principles and criteria, as per the ESIA guideline which and specifically cover , but are not limited to: • Land use type as of 1 January 2009; • Current land use type; • Carbon in soil • Socioeconomic issues; • Food availability including access, stability and utilization within the food shed; • Conservation values; • Ecosystem services; • Soil physical, chemical and biological properties • Air quality; • Physical, chemical and biological properties of the water resources within and outside the production site 2.a.i2 A screening process has been completed in accordance with the ESIA guidelines that indicates whether the Operator should carry out a RESA or a Full ESIA or if only the ESMP is required. 2. Ai3 All reports required under the ESIA guidelines comply with all legal requirements of the relevant authority. 2. Ai4 An ESMP has been completed that integrates all requirements under the RSB standard and details the necessary mitigation, monitoring, and progress plans for biofuel production. 2.a.i5 Where ongoing monitoring requires changes to the ESMP, these are done According to RSB certification requirements, including any required stakeholder agreement and relevant authority clearance.		

• Small-scale operators that are working together and/or selling to the same processor or producer (such as those working in a cooperative or an out grower scheme) shall be permitted to combine operations under one ESIA, RESA or ESMP process. • For certain principles, the ESIA and/or ESMP shall extend beyond the scope of the immediate operational area, for instance for food security, water management and use, ecosystem impacts, biodiversity and conservation in accordance with the RSB ESIA guidelines.			
2b. Free, Prior & Informed Consent (FPIC) shall form the basis for the process to be followed during all stakeholder consultation, which shall be gender sensitive and result in consensus-driven negotiated agreements. *Minimum requirements* • While FPIC provides the process conditions for stakeholder engagement and negotiated agreements, consensus shall be the decision-making tool applied in all cases and carried out in accordance with the RSB consensus building toolkit in the ESIA guidelines. • Those responsible for undertaking the ESIA or RESA shall undertake and document a stakeholder analysis in accordance with the RSB ESIA guidelines. • The ESIA facilitators shall demonstrate that they have made every effort to invite all locally-affected stakeholders, local leaders, representatives of community and indigenous peoples groups and all relevant stakeholders to participate in the consultative process. • The scope of engagement shall be determined by the scale of the operations as set out in the RSB ESIA guidelines. Participatory methodologies described in the RSB guidelines shall be used to ensure meaningful stakeholder engagement. • Special attention shall be made to ensure that women, youth, indigenous and vulnerable people can participate meaningfully in meetings and negotiations, through, for instance, including women's groups, youth groups and issue-based groups in the stakeholder meetings, and holding separate meetings with such groups if necessary. • Where the need is identified, through the ESIA process, in regions of vulnerability and inequality, the ESIA facilitator shall provide informal workshops to build local understanding in the community of the processes that may impact them directly to aid meaningful engagement. • Relevant government authorities shall be included in the stakeholder process to ensure efficient streamlining of the process with legal requirements. Documentation necessary to inform stakeholder positions shall be made freely available to stakeholders in a timely, open, transparent and accessible manner through distribution channels appropriate to the local conditions in accordance with the RSB ESIA guidelines. • Management documents shall be publicly available, except where this is prevented by commercial confidentiality or where disclosure of information would result in negative environmental or social outcomes. • The RSB ESIA guidelines for consensus-seeking shall be used, such that individuals or single-issue groups cannot block consensus. • The RSB ESIA guidelines also provide tools for unblocking deadlocks and they shall be used in the event of a deadlock. In regions of poverty, where the ESIA identifies a significant potential for rights abuses through biofuel operations, the operator shall provide independent legal advice for			

local and indigenous communities in the event that such services cannot be provided by the state or are outside of the reaches of the affected stakeholders to afford such services.			
2c. Biofuel operators shall implement a business plan that reflects a commitment to long-term economic viability. *Minimum requirements* Operators shall develop and implement a business plan that reflects a commitment to long-term economic viability which takes into account the social and environmental principles described in the RSB standard. This information shall be proprietary and shall not form part of the ESIA process.			
3a. In geographic areas with legislative biofuel policy or regulations in force, in which biofuel must meet GHG reduction requirements across its lifecycle to comply with such policy or regulations and/or to qualify for certain incentives, biofuel operations subject to such policy or regulations shall comply with such policy and regulations and/or qualify for the applicable incentives.	• 3. A.i1. The Operator has either calculated the GHG emissions of the biofuel using the applicable methodology or provided all necessary input data to the • Party that performs the calculations. • 3. A.i2 the Operator keeps records of documentation and evidence to support the calculations and the data used or provided. • 3.a.i3 The lifecycle GHG emissions of the biofuel meet the minimum required • GHG reductions of the regulation, for the part of the value chain which the Operator is responsible.		
3b. Lifecycle GHG emissions of biofuel shall be calculated using the RSB lifecycle GHG emission calculation methodology, which incorporates methodological elements and input data from authoritative sources; is based on sound and accepted science; is updated periodically as new data become available; has system boundaries from Well to Wheel; includes GHG emissions from land use change, including, but not limited to above- and below-ground carbon stock changes; and incentivizes the use of co-products, residues and waste in such a way that the lifecycle GHG emissions of the biofuel are reduced. *Minimum requirements:* • The Operator shall report the lifecycle GHG emissions of the feedstock or biofuel using the RSB lifecycle GHG emission calculation methodology ("RSB methodology") to be published in a separate RSB GHG Calculation Methodology document. • In certain instances where the RSB methodology is not available for a fuel pathway, the Operator shall report the lifecycle GHG emissions of the feedstock or biofuel using an alternative, RSB-listed methodology, as indicated in the RSB GHG Calculation Methodology document. • Instead of reporting GHG emissions using RSB default values, an Operator may use the RSB calculations to determine more accurate GHG emissions ("calculated values"). When calculated values show better performance than RSB default values, the Operator shall provide, when requested, the qualitative or quantitative data upon which the calculated values are based.	• 3.b.i1 The Operator has either (a) conducted all required calculations using the • RSB calculation methodology OR the RSB-listed methodology that are applicable to her/his operations, OR (b) provided all necessary input data to • The party that performs the GHG calculations. • 3.b.i2 The Operator keeps records of documentation and evidence to support • The calculations and the data used in the calculations for the RSB calculation methodology OR the RSB listed methodology. • 3.b.i3 IF the Operator used a GHG calculation other than the RSB methodology: • The methodology chosen by the Operator is in the list of RSB-listed methodologies. • 3. B.i4 IF the Operator used a GHG calculation other than the RSB methodology: The same methodology has been used for the entire supply chain of the biofuel Up to the point where the Operator took ownership or possession. • 3. B.i 5 IF the Operator used calculated values: The Operator keeps records of documentation and evidence to support the calculations and the data used in the calculations. • 3. bi6 The Operator has reported the results of 3.b.i1 and 3.b.i5 to RSB. • 3. bi7 The Operator can demonstrate that they are seeking to minimize GHG emissions in the operations. • 3. b.i8 The operations meet the GHG intensity requirements, as set out in The appropriate guidance document.		
3c. Biofuel shall have lower lifecycle GHG emissions than the fossil fuel baseline and shall contribute to the minimization of overall GHG emissions. *Minimum requirements:* • Lifecycle GHG emissions of biofuel, calculated following the methodology	• There is documented evidence that lifecycle GHG emissions of the biofuel, In gCO2e/MJ--□fuel, have been calculated using the RSB GHG calculations tool and methodology. Documentation includes printouts of the results of the RSB Tool.		

in Criterion 3b, shall meet a minimum reduction (the "minimum GHG emission reduction threshold") below the applicable fossil fuel baseline; said threshold shall increase over time. • During the pilot test period, not to exceed 9 months, testing will be done against minimum GHG emission reduction thresholds set at 10%, 40% and 70%. • At the conclusion of the pilot test period, the initial minimum GHG emission reduction threshold shall be set such that it is significant and ambitious.	• 2 For substitutes of Gasoline fuel, the Lifecycle GHG emissions of biofuel, in gCO2e/MJ-fuel, are lower than the gasoline baseline by the minimum GHG emission reduction threshold stated in Criterion 3c. • For substitutes of diesel fuel, the lifecycle GHG emissions of biofuel, in gCO2e/MJ--□fuel, are lower than the diesel baseline by the minimum GHG emission reduction threshold stated in Criterion 3c. Note: The gasoline Baseline and the diesel baseline are stated in the RSB Methodology document in gCO2e/MJ--□fuel.		
4a Workers shall enjoy freedom of association, the right to organize, and the right to collectively bargain. *Minimum requirements* 1. In countries where the law prevents collective bargaining or unionization, operators shall not interfere with workers' own efforts to set up representational mechanisms in such cases, and shall provide a mechanism for workers to engage with employers without breaking the law.	• 1. All workers have the right to freely organize, voluntarily negotiate their working Conditions and bargain collectively with the company, as established in ILO Conventions 87 and 98. • 2. The Operator effectively informs personnel that they are free to join an organization of their choosing and that their doing so will not result in any negative consequences to them from the company. • 3. The Operator does not interfere with the establishment, functioning, or administration of such workers' organizations or collective bargaining. • 4. In situations where the rights to freedom of association and collective bargaining are restricted under law, the Operator allows workers to freely elect their own representatives, does not interfere with such representational mechanisms, and provides a mechanism for workers to engage with employers without breaking the law.		
4b No slave labor or forced labor shall occur.	1. The Operator does not engage in or support the use of forced or compulsory labor as defined in ILO Convention 29. No forced, compulsory, bonded, trafficked or otherwise involuntary labor is being used by the Operator. 2. No workers of any type are required to lodge their identify papers with anyone and no part of their salary, benefits or property is retained in order to force them to work or stay on the operation. 3. Spouses and children of workers are not obliged to work in the operation.		
4c No child labor shall occur, except on family farms and then only when work does not interfere with the child's schooling and does not put his or her health at risk. *Minimum requirements* 4. Schooling age limit is that defined in the national legislation or 14, whichever is higher. Hazardous child labor as defined by ILO Convention 138 is not allowed. 5. Work by children on family small holdings is only acceptable under adult supervision and when work does not interfere with the child's schooling nor puts at risk his or her health.	Children of age 14 and under (or the legal national age) are not employed directly or indirectly by the operation. [Exceptions may be made in the case Of family farms – see 4.c.i4 and 4.c.i5 below] Workers under the age of 18 do not undertake hazardous or dangerous work. *In The case of family farms only:* Where permitted by law, children between 12 and 14 years of age can work part Time on family farms, only if they are family members or neighbors in a community where children have traditionally helped with agricultural work. Where children work on family farms, the work does not interfere with their educational, social or physical development and the work day including schooling, transport etc and work does not exceed 10 hours.		
4d Workers shall be free of discrimination of any kind, whether in employment or opportunity, with respect to gender, wages, working conditions, and social benefits. *Minimum requirements* • Employees, contracted labor, small out-growers, and employees of out-growers shall all be free of discrimination as per ILO Convention 111. Career development shall be encouraged for all workers • Work sites shall be safe for women; free from sexual harassment and other discrimination and abuse; and promote access to jobs, skills training, recruitment and career development for women to ensure more gender balance in work and career development.			

4e. Workers' wages and working conditions shall respect all applicable laws and international conventions, as well as all relevant collective agreements. Where a government regulated minimum wage is in place in a given country, this shall be observed. Where a minimum wage is absent, the wage paid for a particular activity shall be negotiated and agreed on an annual basis with the worker. Men and women shall receive equal remuneration for work of equal value. *Minimum requirements* • Wages shall be provided in cash or in another form acceptable to workers. Any housing provided by the operator for permanent or temporary workers shall be built and maintained to ensure good sanitary, health, and safety conditions. • For piecework (pay based on production rather than hours), the pay rate must allow workers to earn at least the legal minimum wage or comparable regional wage, whichever is higher, based on an eight-hour workday under average conditions. • The maximum number of regular hours worked per week must not exceed 48. Workers may work overtime which shall be voluntary, but total working hours shall not exceed 80 per week.			
4f Conditions of occupational safety and health for workers shall follow internationally-recognized standards. *Minimum requirements* • Workers shall not be exposed to any occupational health or safety hazards without adequate protection and training as defined in national law and international standards.			
4g. Operators shall implement a mechanism to ensure the human rights and labor rights outlined in this principle apply equally when labor is contracted through third parties. *Progress requirements (required within three years of certification)* Operators shall identify instances where those working within the scope of their operational function (feedstock producer, feedstock processor, or biofuel producer) are contracted outside of the direct influence of the operation by external parties and shall implement a mechanism to ensure that such contracted workers are afforded the same rights as described in this principle as employed staff within the process.			
5a In regions of poverty, the socioeconomic status of local stakeholders impacted by biofuel operations shall be improved. *Minimum requirements* • In areas where the socioeconomic baseline survey undertaken during the ESIA process identifies an excess of unemployed or underemployed labor in the locality of the operations, biofuel operations shall optimize the job creation potential. • The operator shall assess ways in which the use of permanent and local labor can be promoted and introduced over the use of migrant, seasonal and casual labor. If it is determined through the ESIA or during the continuous ESIA assessment process that mechanization is the optimal choice from an environmental, economic, and social perspective, the transition from labor intensity to mechanization shall be done in a fair and equitable way for existing workers where as many of the existing workers as possible are retrained and employed in the mechanized process. • Measured improvements in the social and economic indicators as set against the baseline survey carried out under the ESIA shall be targeted			

for review every two years. • Skills training shall be provided by the operator if necessary to ensure the implementation of this criterion. • Mitigation measures for potential negative impacts shall be negotiated through the ESIA process. • Cultural sensitivity and respect for existing social structures shall be applied in the development of options for compliance with this criterion • . At least one measure to significantly optimize the benefits to local stakeholders shall be implemented within a five year period of the start of the operations, and these include, but are not limited to the following: a. Creation of year round and/or long term jobs b. The establishment of governance structures that support empowerment of small scale farmers and rural communities such as co-operatives and micro credit schemes c. Use of the locally produced bio-energy to provide modern energy services to local poor communities d. Shareholding options, local ownership, joint ventures and partnerships with the local communities e. Social benefits for the local community such as the building or servicing of clinics, homes, hospitals and schools.			
5b In regions of poverty, special measures that benefit and encourage the participation of women, youth, indigenous communities and the vulnerable in biofuel operations shall be designed and implemented. *Minimum requirement* Data for rural poor women in regions of poverty shall be disaggregated in the base line social surveys to assist with the design of special programs for this sector *Progress requirements* Training and capacity building shall be required to give effect to this principle. Such training is required for both the workers and also for management that oversees employment protocols and supervision.			
6a. Biofuel operations shall assess risks to food security in the region and locality and shall mitigate any negative impacts that result from biofuel operations. *Minimum requirements* • If the screening exercise of the ESIA process indicates that biofuel operations will involve a change in land ownership (rights) and take place in a region where food security is a risk, a full assessment shall be carried out according to the RSB food security guidelines. • If the screening exercise described in the ESIA guidelines indicates that biofuel operations will not involve a change in land ownership (rights) but will take place in a region where food security is a risk, an RESA can be undertaken with a specialist assessment of the impact on food security • The scope of the impact assessment shall include additional impacts that the biofuel operations may have on cross-cutting requirements for food security including land, water, labor, and infrastructure. If the assessment indicates a food security risk as a result of biofuel operations, a mitigation plan shall be developed and implemented through the ESMP. The risk assessment shall identify potential positive impacts on local economic development that can be promoted through compliance with Principle 5 on Rural and Social Development.			
6b. In food insecure regions, biofuel operations shall enhance the local food			

security of the directly affected stakeholders. *Minimum requirements* • In regions where food security is an ongoing risk and concern, operations shall enhance food security of the locally affected community by, for instance, setting aside land for food growing, increasing yields, providing opportunities for workers to carry out household-level food production, sponsoring agricultural support programs and activities, and/or making value-added food byproducts available to the local market. • Strategies to enhance regional food security shall be integrated with the rural and social development goals outlined in Principle 5.			
7a Conservation values within the potential or existing area of operations shall be identified through a land-use planning process. Conservation values of local, regional or global importance within the potential or existing area of operation shall be maintained or enhanced. *Minimum requirements* • Operators shall evaluate the conservation value(s) of a potential or existing operation area following a land-use impact assessment, as detailed in the guidance. • Biofuel operations shall occur in priority on areas with the lowest possible risk of impacts on people and the environment. • Biofuel operations shall only happen on higher risk areas under limited conditions, which ensure that their conservation value(s) is/are maintained or enhanced. • Areas identified as "no-go areas" shall not be used for biofuel operations after the 1st of January 2009, unless feedstock production or processing operations are legally authorized as part of the conservation management for the area concerned. • Pursuant to land-use impact assessment, areas that contain identified conservation values of global, regional or local importance, such as natural habitats, or that serve to maintain or enhance such conservation values (e.g. natural buffer zones) shall not be converted after the 1st of January 2009. Such areas shall only be used if adequate management practices maintain or enhance the identified conversation values (e.g. sustainable biomass harvesting). • In case of new operations, conversion or use of areas shall not occur prior to the land use impact assessment. Hunting, fishing, ensnaring, poisoning and exploitation of rare, threatened, endangered and legally protected species shall not occur on the operation site.			
7b Ecosystem functions and services that are directly affected by biofuel operations shall be maintained or enhanced. *Minimum requirements* Following the land-use impact assessment (7a), operators shall implement a management plan and practices that maintain ecosystem functions and services both inside and outside the operation site, which are directly affected by biofuel operations.			
7c Biofuel operations shall protect, restore or create buffer zones. *Minimum requirements* • Buffer Zones shall be protected, restored or created to avoid negative impacts from biofuel operations on areas that are contiguous to the operation site. Within the operation site, buffer zones shall be protected, restored or created to avoid negative impacts from the biofuel operations on water courses, aquifers and any area that contains conservation			

value(s) of local, regional or global importance, and remain unused for biofuel operations.			
7d Ecological corridors shall be protected, restored or created to minimize fragmentation of habitats. *Minimum requirements* Ecological corridors within the operation site should be set-aside and protected with appropriate surrounding buffer zones after the 1st of January 2009. Whenever the operation site impairs the connectivity between surrounding ecosystems, ecological corridors shall be created by the operator. *Progress requirements (others than small-scale operators only)* New ecological corridors shall be created within the operation site if it is surrounded by areas containing wildlife and there is evidence that such corridors would improve connectivity. Any ecological corridor destroyed between the 1st of January 2004 and the 31st December 2008 on or near the operation site and for which the operator is directly accountable shall be restored.			
7e Biofuel operations shall prevent invasive species from invading areas outside the operation site *Minimum requirements* • Operators shall not use any species officially prohibited in the country of operation., Whenever the species of interest is not prohibited in the country of operation, • Operators shall seek adequate information about the invasiveness of the species to be used for feedstock production, e.g. in the Global Invasive Species Database (GISD). If the species is recorded as highly invasive under similar conditions (similar climate, and similar local ecosystems, and similar soil types), this species shall not be used. • If the species has not been recorded as representing a high risk of invasiveness under similar conditions (climate, local ecosystems, soil type), Operators shall follow specific steps: See literature document			The Global Invasive Species Database (GISD)
8a Operators shall implement a soil management plan designed to maintain or enhance soil physical, chemical, and biological conditions. *Minimum requirements* • Soil erosion shall be minimized through the design of the feedstock production site and use of sustainable practices (including, for example, crop rotation, direct planting, maintaining vegetative ground cover, terracing, and maintaining or creating tree hedges) in order to enhance soil physical health on a watershed scale. • None of the chemicals recorded in the WHO 1a and 1b lists shall be used (see also Principle 11). The use of agrarian and forestry residual products for feedstock production, including lignocelluloses material, shall not be at the expense of long-term soil stability and organic matter content. *For others than small-scale operators:* • A soil management plan shall be implemented that includes practices that prevent or reverse degradation over the long term Periodic sampling of soil on the feedstock production site shall be performed to evaluate the effect of implemented practices on the organic matter content. Where such practices are not maintaining soil organic matter at the optimal level, alternative practices shall be investigated. *For small-scale operators only:* • Small-scale operators shall implement practices aiming to maintain or enhance soil organic matter on the feedstock production site.			

Progress requirements • For annual crops, operators shall implement measures to improve soil health, such as Conservation Agriculture practices as defined by the FAO, including but not limited to: organic direct planting, permanent soil cover and crop rotation and fallow areas with natural or planted vegetation in order to recover natural fertility and interrupt pest life cycles • For perennial crops, none of the chemicals recorded in the WHO 1a and 1b lists, in Annex III of the Rotterdam Convention and in the Stockholm Convention on POPs shall be used within 3 years after certification (See full guidance on chemicals under principle 11).			
9a Biofuel operations shall respect the existing water rights of local and indigenous communities. *Minimum requirements* • The use of water for biofuel operations shall not be at the expense of the water needed by the communities that rely on the same water source(s) for subsistence. Water resources under legitimate dispute shall not be used for biofuel operations until any legitimate disputes have been settled through negotiated agreements with affected stakeholders following a free, prior and informed consent enabling process. • *For others than small-scale operators:* As part of the Environmental and Social Impact Assessment (ESIA) outlined in Principle 2, a consultative process that includes water regulatory authorities, local water experts, community members, and indigenous peoples relying on the same water table or watercourse for their needs shall be used to identify downstream or groundwater users and determine the formal or customary water rights that exist, as well as critical aquifer recharge areas, replenishment capacities of local water tables, watercourses, and ecosystem needs. • The potential impacts of biofuel operations on any of these aspects shall be evaluated, and any negative impacts mitigated. Any formal or customary water rights that exist shall be respected and protected through the water management plan (see 9.b) to prevent infringement of such rights. No modification of the existing rights can happen without the Free Prior and Informed Consent of the parties affected. • *For small-scale operators only:* The potential impacts of biofuel operations on water availability within the local community and ecosystems shall be assessed by the operator, and any negative impacts mitigated.			
9b Biofuel operations shall include a water management plan which aims to use water efficiently and to maintain or enhance the quality of the water resources that are used for biofuel operations. *Minimum requirements* • Operators shall implement a water management plan. The water management plan shall be made available to the public, unless limited by national law or international agreements on intellectual property. • The water management plan shall be consistent with local rainfall conditions not contradict any local or regional water management plans and include the neighbor areas, which receive direct runoff from the operation site. Any negative impact on these neighbor areas shall be mitigated. • The operator shall undertake an annual monitoring of the success of the implementation of the water management plan. *Progress requirements:*			

• The water management plan shall include steps for reusing or recycling waste water, appropriate to the scale and intensity of operation.			
9c Biofuel operations shall not contribute to the depletion of surface or groundwater resources beyond replenishment capacities. *Minimum requirements* • Water used for biofuel operations shall not be withdrawn beyond replenishment capacity of the water table, watercourse, or tank from which the water comes. The replenishment capacity shall be evaluated through the Scoping Exercise or the Environmental and Social Impact Assessment (Water Specialist guideline) outlined in Principle 2. • Based on the Scoping Exercise or the Environmental and Social Impact Assessment outlined in Principle 2 and the water management plan (9.b), the use and share of water resources (e.g. maximum volume to be annually withdrawn from the water table) for biofuel operations shall be defined in agreement with local experts and the community; any water user committees shall be consulted. • Irrigated biofuel crops and freshwater-intensive biofuel operations systems shall not be established in long-term freshwater-stressed areas, unless the implementation of: good practices or an adequate mitigation process that does not contradict other requirements in this standard ensures that the water level remains stable. • Operators shall not withdraw water from natural watercourses to an extent that modifies its natural trajectory or the physical, chemical and biological equilibrium it had before the beginning of operations. • *Progress requirements* Operator shall demonstrate commitment to the improvement of water efficiency over time through the implementation of water-saving practices, including but not limited to rain water harvesting			
9d Biofuel operations shall contribute to the enhancement or maintaining of the quality of the surface and groundwater resources. *Minimum requirements* • Biofuel operations shall not occur on a critical aquifer recharge area without a specific authorization from legal authorities. • Operators shall implement the best available practices which aim to maintain or enhance the quality of surface and ground water resources that are used for biofuel operations to the level deemed optimal for the local system for sustained water supply, ecosystem functioning and ecological services; this optimal level is to be defined, as part of the ESIA (PC2), through the consultation of local experts, communities and producers, taking into account local economic, climatic, hydrologic and ecologic conditions. • Adequate precautions shall be taken to contain effluents and avoid runoffs and contamination of surface and ground water resources, in particular from chemicals and biological agents. Buffer zones shall be set between the operation site and surface or ground water resources. *Progress requirements:* • For existing operations, degradation of water resources that existed prior to certification and for which the operator is directly accountable shall be reversed. Wherever applicable, operators (except small-scale operators) shall participate in projects that aim to improve water quality at a watershed scale. • Waste water or runoff that contains potential organic and mineral contaminants shall be treated or recycled to prevent any negative impact			

on humans, wildlife, and natural compartments (water, soil). None of the chemicals recorded in the WHO 1a and 1b lists, in Annex III of the Rotterdam Convention or in the Stockholm Convention on POPs shall be used within 3 years after certification			
10a Air pollution emission sources from biofuel operations shall be identified, and air pollutant emissions minimized through an air management plan. *Minimum requirements* • An emission control plan appropriate to the scale and intensity of operations shall be in place regarding major air pollutants including carbon monoxide, nitrogen oxides, volatile organic compounds, particulate matter, sulphur compounds, dioxins and other substances recognized as potentially harmful for the environment or human health. The plan shall identify all potential air pollution sources and describe their nature (e.g. open burn, boiler stack). The plan shall describe any air pollution mitigation strategies that are employed, or else the rationale for not utilizing such strategies. *Progress requirements* • The operator shall investigate and, whenever possible in the local context, implement Best Available Technology (BAT) to reduce air pollution, appropriate to the scale and intensity of operation.			
10b Biofuel operations shall avoid and, where possible, eliminate open-air burning of residues, wastes or by-products. *Minimum requirements* A plan shall be put in place to phase out any open-air burning of leaves, straw and other agricultural residues within three years following certification. If workers' health and safety is at stake (for instance in manual sugarcane harvesting) or when no viable alternative is available or affordable in the local context, if burning may prevent natural fires, or if the cultivation of the crop periodically requires burning for viability in the long term without any equivalent alternatives (e.g. switch grass), limited open-air burning practices may occur. *Progress requirements* Open air burning of agricultural residues and by-products shall not occur following the phase-out plan (10.b.1).			
11a Information on the use of technologies in biofuel operations shall be fully available, unless limited by national law or international agreements on intellectual property. *Minimum requirements* • When complying with and auditing against this criterion, proprietary technology shall be protected from competitors and intellectual property rights shall be respected The operator shall disclose potential hazards related but not restricted to Genetically Modified Organisms (GMO) when such technology is used, and make this information available to the public upon request. The Biosafety Clearinghouse established under the Cartagena Protocol on Biosafety shall be consulted to provide information about specific GMOs, including related risk and countries' decisions regarding that technology.			
11b The technologies used in biofuel operations including genetically modified: plants, micro-organisms, and algae, shall minimize the risk of damages to environment and people, and improve environmental and/or social performance over the long term. *Minimum requirements* • The use of genetically modified organisms shall follow relevant national or			

international guidelines, laws and agreements, crop-specific stewardship systems, and local and community coexistence agreements or understandings. For new operations, operators shall provide evidence that the hazardous technologies they use do not contradict any of the RSB principles and criteria before the beginning of operations. • Operators using GMOs shall take measures to prevent migration of genetically modified material and shall cooperate with neighbours, regulatory and conservation authorities, and local stakeholders to implement monitoring and preventative measures. Crop-specific and technology-specific mitigation strategies shall be utilized. For new operations, feedstock producers shall use indigenous crops whenever alternative crops reduce yield and/or environmental and/or social performance compared to indigenous crops.			
11c Micro-organisms used in biofuel operations which may represent a risk to the environment or people shall be adequately contained to prevent release into the environment. *Minimum requirements* In no case shall genetically modified micro-organisms or any micro-organisms that pose a risk (to human health or the environment be released outside the processing/production unit. Any such organism used for processing shall be destroyed or adequately neutralized before being disposed of. The operator shall implement a plan that includes adequate monitoring and an emergency procedure in case of accidental dissemination of any such micro-organisms into the environment.			
11d Good practices shall be implemented for the storage, handling, use, and disposal of biofuels and chemicals. *Minimum requirements* • None of the chemicals recorded in the WHO's 1a and 1b lists shall be used. The use of chemicals recorded in Annex III of the Rotterdam Convention and in the Stockholm Convention on Persistent Organic Pollutants (POPs) shall be listed (type and annual volume used) and a plan to phase out any such chemical over the three years following certification shall be set. • Manufacturer's safety instructions for the storage, handling, use, and disposal of chemicals shall be followed. The use of ground or aerial pesticides shall comply with the FAO's Guidelines on Good Practices for Ground and Aerial Applications of Pesticides. Any chemical used in biofuel operations shall be in accordance with the manufacturer's safety instructions. *Progress requirements* None of the chemicals recorded in Annex III of the Rotterdam Convention or in the Stockholm Convention on Persistent Organic Pollutants shall be used within three years after certification.			
11e Residues, wastes and byproducts from feedstock processing and biofuel production units shall be managed such that soil, water and air physical, chemical, and biological conditions are not damaged. Operators who must comply: Feedstock Processor and Biofuel Producer. *Minimum requirements* • A waste and byproduct management plan shall exist such that wastes and byproducts are handled and/or disposed of in appropriate containers to prevent any environmental contamination and damage to human health.			

• These products shall not be in direct contact with soils, water sources and air outside the processing and production units unless their innocuousness to the environment and people is officially stated by manufacturers or the country or regional (e.g. EU, ASEAN, ALENA) guidelines. • In all other cases, handling and disposal must follow the manufacturer's recommendation and the country or regional (e.g. EU, ASEAN, ALENA) guidelines. For new and expanding operations, the design of operations shall integrate the necessary infrastructure for safe burning of processing waste and by-products. For existing operations, a strategy shall be set to develop the necessary infrastructures for safe burning of waste and by-products. *Progress requirements* • Measures shall be taken to implement clean and efficient processes for conversion of residues, wastes or by-products into energy (e.g. collect biogas or heat from fermenting or burning wastes and by-products in order to generate electricity or heat) appropriate to the scale and intensity of operation. Such processes shall always occur in an appropriate facility to minimize air pollution from substances recognized as potentially harmful for the environment or human health. Solid residues from fermentation or burning shall be disposed of such that soil and water conditions are not damaged or according to national regulations. • For others than small-scale operators, by-products or wastes shall also be reused by the processing/production unit or transferred to other sectors whenever their use may improve the overall system's energy balance, greenhouse gas emissions, and/or economic viability without impairing the other principles and criteria in this standard.			
12a Existing land rights and land use rights, both formal and informal, shall be assessed, documented, and established. The right to use land for biofuel operations shall be established only when these rights are determined. *Minimum requirements* The ESIA guidelines on land rights including the toolkit on stakeholder mapping shall be used to determine land rights and land use rights. Land under legitimate dispute shall not be used for biofuel operations until any legitimate disputes have been settled through Free, Prior and Informed Consent and negotiated agreements with affected land users.			
12b Free, Prior, and Informed Consent shall form the basis for all negotiated agreements for any compensation, acquisition, or voluntary relinquishment of rights by land users or owners for biofuel operations. *Minimum requirements* • No involuntary resettlement shall be allowed for biofuel operations. The ESIA guidelines for land rights, the consensus building toolkit and Free Prior and Informed Consent shall be used as the basis for any negotiated agreements. • Where land rights and land use rights are voluntarily relinquished, local people shall be fairly, equitably and timely compensated for any agreed land acquisitions and relinquishments of any land rights or land use rights. • Compensation for voluntary relinquishment shall include appropriate balancing measures needed to preserve the ability of the persons concerned to sustain their livelihoods in an autonomous and dignified manner. Independent, qualified land valuation specialists shall be used			

for valuing all land and asset values. • Where land is to be sold it shall be done on a willing-seller/willing-buyer basis. Coercion to alter existing land rights or land use rights shall not be allowed in biofuel operations • Where the rule of law is not adequately applied, international and regional legal bodies shall be consulted for rulings and information on disputes. • Biofuel operations shall provide for independent legal advice for communities who do not have the resources to represent their own interests in disputes. • If there are disputes about the tenure agreements of the land among stakeholders, biofuel operations shall not be approved.			

GlobalGAP – former EurepGAP (agricultural products)

General characteristics:	
Status:	In implementation
Geographical coverage:	Worldwide
Scope:	Standards for fruit and vegetables; flower and ornamentals, integrated farm assurance, integrated aquaculture, coffee [15]. Food crops – combinable. Broad range of crops including soy, palm oil, sugar cane, rapeseed, sugar beet, wheat, corn/maize [8] While biomass production is not specifically mentioned in any of these standards, it appears integrated farm assurance would be the most relevant [15].
Initiator system:	GlobalGAP is a private sector body. It is an industry initiative [8].

Short summary system or initiative:	Extension system:	
GlobalGAP is a private sector body that sets voluntary standards for the certification of agricultural products around the globe. GlobalGAP is a pre-farm-gate-standard that means the certificate covers the process of the certified product from before the seed is planted until it leaves the farm. GlobalGAP is a business-to-business label and is therefore not directly visible for consumers [49].	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Y
Context:		
Developed as a reaction from retailers on growing concerns by the consumers with product safety, environmental and labor standards. On the other side the development of common certification standards were also in the interest of many producers. Those with contractual relations to several retailers complained that they had to undergo multiple audits against different criteria every year. On this background GlobalGAP started to work on harmonized standards and procedures for the development of Good Agricultural Practices (GAP) in conventional agriculture [49].		
Status of system:		
EurepGAP changed its name in 2007 to GlobalGAP. In implementation.		
Planned activities:		
Standards continuously updated		

Structure system or initiative:	
Juridical basis:	GlobalGAP membership is voluntary [50].
Participation in system:	GlobalGAP members include retailers, producers, farmers and associate members from the input and service side of agriculture. Governance is by a Board which is chaired by an independent Chairperson. The Board also agrees on the activity plan of the organization. Sector Committees discuss and decide upon product and sector specific issues. All committees have 50% retailer and 50% producer - supplier representation [49]. Standard setting is a clearly defined and structured process [12]. Standards are developed and revised by an appropriate sector-committee [12]. The work of the Committees is supported by FoodPLUS, a not for profit limited company fulfilling a secretariat function for GlobalGAP. Its executive Management is responsible for the implementation of Policies and Standards [49].
Local stakeholder involvement	Not specifically addressed. GlobalGAP National Technical Working Groups are established to harmonize certification activities within the region and scope [50].
Monitoring performance:	-
Chain of custody system	As soon as leaving the production, the product will be controlled by other QA or certification systems specializing in package and manufacture. That way the product can be traced from the producer to the consumer [12]. The CoC consists of a management system with an appropriate combination of segregation and identification to avoid mixing of materials. This is used I the certification of e.g. the Green Coffee and Tea sub-scopes certification [50]. Product processing remains outside GlobalGAP scope where not explicitly included. In addition, GlobalGAP links up with among others, BRC and IFS, to cover the

	supply chain [50].
Level of detail CoC system:	Verification: Existing national or regional quality assurance schemes that have successfully completed their benchmarking process are recognized as equivalent to GlobalGAP [49]. Inspection takes place on an annual basis. There are also unannounced visits. In the 1st year, records are only valid when going back up to 3 months before the date of 1st harvest after registration is completed. Certificate is valid for a year [50]. Compliance of GlobalGAP consists of 3 control points [50]: - Major musts: 100% compliance required - Minor musts: for all scopes 95% compliance required - Recommendations Certification bodies: Farmers or farmer groups can only be certified against the EurepGAP criteria by authorized Certification Bodies, which must be approved by EurepGAP and have applied to an Accreditation Body for EN 45011 or ISO 65 [49]. The contract between the CB and the producer has an initial duration of up to 3 years [50]. Accreditation: Accreditation granted by an independent third party certification body that has been approved by GlobalGAP [15].

Further information on:	
Removal of trade barriers	
Costs:	Certification fees of Certification Body are free market prices and not fixed by GlobalGAP. Allows group certification. Expensive to get certified especially small farms in LEDC's. Annual membership fee is around $3800 (NZ dollar) Certificates cover a period of three years, but they are reviewed annually, expensive to be audited [8].

So called Control Points and Compliance Criteria (CPCC) indicate which items must be followed by the producer and which are audited to verify compliance. Checklists replicate the control points and are e.g. used by inspection of producers [50].
The CPCC document consists of modules for:

- Scopes (more generic production issues)
- Sub-scopes (covering specific product details)

The scopes are automatically coupled to sub-scopes (e.g. certification of tea automatically involves the certification of All Farm Base and the Crops Base). [50]. The sub-scope 'combinable crops' include oil, sugar and starch crops.

List of principles given for combinable crops (including crops base and all farm base as scopes) [51-53].

List of principles included:	
All farms base	
1	Record keeping and internal self-assessment
2	Site history and site management (see also crops base)
3	Workers health, safety and welfare
4	Waste and pollution management, recycling and re-use
5	Environment and conservation
Crops base	
6	Complaints and Traceability
7	Propagation material (also see combinable crops)
8	Soil management
9	Fertilizer use
10	Irrigation / fertigation (also see combinable crops)
11	Integrated pest management
12	Plant protection products
Combinable crops (if not mentioned under Crops Base)	
13	Machinery and equipment
14	Crop protection
15	Harvesting
16	Harvested Crop handling

Criteria [51-53] > **Control Point (m= minor must, M= major must, R= recommendation)**	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate **Compliance Criteria**	Methodology used	Databases used:
1a. Record keeping and internal self-assessment 1. Are all records requested during the external inspection accessible and kept for a minimum period of time of two years, unless a longer requirement is stated in specific control points (m)? 2. Does the producer or producer group take responsibility to undertake a minimum of one internal self-assessment or producer group internal inspection, respectively, per year against the GLOBALGAP Standard (M)? 3. Are effective corrective actions taken as a result of non-conformances detected during the internal self-assessment or internal producer group inspections (M)?	1. Producers keep up to date records for a minimum of two years from the date of first inspection, unless legally required to do so for a longer period. No N/A. 2. There is documentary evidence that the GLOBALGAP (EUREPGAP) or benchmarked standard internal self-assessment/internal producer group inspections under responsibility of the producer/producer group ha(s) ve been carried out and are recorded annually. No N/A. *3.* Effective corrective actions are documented and have been implemented. No N/A		
2a. Site history a. Is a recording system established for each unit of production or other area/location to provide a permanent record of the livestock/aquaculture production and/or agronomic activities undertaken at those locations? Are these records kept in an ordered and up-to-date fashion (M)? b. Is a reference system for each field, orchard, etc or other area used in production established and referenced on a farm plan or map (m)? **2b. Site management** c. Is there a risk assessment for new agricultural sites or existing sites only where risks have changed, which shows the site in question to be suitable for production, with regards to food safety, operator health, the environment and animal health where applicable (M)? d. Has a management plan been developed setting out strategies to minimize all identified risks, such as pollution or water table contamination? Are the results of this analysis recorded and used to justify that the site in question is suitable (m)? e. Is there, where feasible, crop rotation for annual crops (R)?	a. Current records must provide a history of GLOBALGAP production of all production areas. For Crops: New applicants must have full records for at least three months prior to the date of external inspection that reference each area covered by a crop with all the agronomic activities related to GLOBALGAP documentation required of this area; No N/A b. Compliance must include visual identification in the form of a physical sign at each field/greenhouse/plot/livestock building/pen or other farm, or a farm plan or map that could be cross referenced to the identification system. No N/A. c. A documented risk assessment must be carried out when crops are to be introduced onto new sites. The risk assessment must be revised to take into account any new food safety risks. The risk assessment must take account site history (crops/stocking) and consider impact of proposed enterprises on adjacent stock/crops/environment d. A management plan that has implemented strategies to meet the objectives of this specific control point has been developed e. The rotations can be verified from planting date and/or plant protection product application records.	d. Management plan should include one or more of the following: habitat quality, soil compaction, soil erosion, emission of greenhouses gases where applicable, humus balance, phosphorus balance, nitrogen balance, intensity of chemical plant protection).	(see Annex on Risk Assessment to determine when a risk assessment is needed).
3.1 Risk assessments a. Does the farm have a written risk assessment for safe and healthy working conditions (m)? b. Does the farm have a written health, safety and hygiene policy and procedures including issues of the risk assessment (m)? **3.2 Training** c. Is there a record kept for training activities and attendees (m)? d. Do all workers handling and/or administering veterinary medicines, chemicals, disinfectants, etc and all workers operating dangerous or complex equipment as defined in the risk assessment have certificates of competence, and/or details of other such qualifications (M)? *Other Minor musts are not mentioned here but include:* *Health and safety training, first aid, hygiene instructions* **3.3 Hazards and first aid** e. Do accident and emergency procedures exist; are they visually displayed and communicated to all persons associated with the farm activities (m)?	a. Written risk assessment can be a generic one but it must be appropriate for conditions on farm. Risk assessment must be reviewed and updated when changes in organization occur. No N/A. b. The health, safety and hygiene policy must at least include the points identified in the risk assessment. The policy must be reviewed and updated when the risk assessment changes. c. A record is kept for training activities including the topic covered, the trainer, the date and attendees. Evidence of the attendance is required. d. Records must identify workers who carry out such tasks, and show certificates of training or proof of competence. No N/A e. Permanent accident procedures must be clearly displayed in accessible, and visible location(s).These instructions are available in the predominant language(s) of the workforce and/or pictograms. The procedures must identify, if appropriate the following; e.g.: farm's map reference or farm address, - contact person(s), location etc. f. Permanent and legible signs must indicate potential hazards. Warning signs must be present. No N/A. g. Complete sets of protective clothing which enable label instructions	b. Policy could include accident and emergency procedures, hygiene procedures, dealing with any identified risks in the working situation, etc.	

f. Are potential hazards clearly identified by warning signs and placed where appropriate (m)? *Other Minor musts are not mentioned here but include:* *Safety advice, First Aid Kits* **3.4 Protective clothing / equipment** G. Are workers (including subcontractors) equipped with suitable protective clothing in accordance with legal requirements and/or label instructions or as authorized by a competent authority (M)? h. Is protective clothing cleaned after use and stored so as to prevent contamination of the clothing or equipment (M)? **3.5 Worker welfare** I. Is a member of management clearly identifiable as responsible for workers health, safety and welfare (M)? J. Do workers have access to clean food storage areas, designated dining areas, hand washing facilities and drinking water (m)? K. Are on site living quarters habitable and have the basic services and facilities (m)? *Other Minor musts are not mentioned here but include:* *Information availability, communication manager – worker* **3.6 Subcontractors** L. When the producer makes use of subcontractors, is all the relevant information available on farm (m)?	and/or legal requirements and/or requirements as authorized by a competent authority to be complied with are available, used and in a good state of repair. h. Protective clothing is regularly cleaned, according to a schedule adapted to the type of use and degree of soiling. Cleaning the protective clothing and equipment includes the separate washing from private clothing and glove washing before removal. All the protective clothing and equipment are stored apart and physically separate. No N/A. I. Documentation is available that demonstrates that a clearly identified, named member of management has the responsibility for ensuring compliance with existing, current and relevant national and local regulations and the implementation of the policy on workers health safety and welfare. J. A place to store food and to eat must be available. In addition, hand washing facilities and potable drinking water must be available to workers. K The living quarters for the workers on farm are habitable, have a sound roof, windows and doors, and have the basic services of running water, toilets, and drains. L. Sub-contractors must carry out an assessment (or the producer must do it on behalf of the subcontractor) of compliance against the GLOBALGAP control points relevant to the services provided on farm		
4.1 Identification of waste and pollutants a. Have all possible waste products and sources of pollution been identified in all areas of the business (m)? **4.2 Waste and pollution action plan** b. Is there a documented farm waste management plan to avoid or reduce wastage and pollution and avoid the use of landfill or burning, by waste recycling? Are organic wastes composted on the farm and utilized for soil conditioning, provided there is no risk of disease carry-over (R)? c. Are the farm and premises clear of litter and waste to avoid establishing a breeding ground for pests and diseases which could result in a food safety risk (M)? *Other Recommendations are not mentioned here but include:* *Implementation plan, adequate provisions for waste disposal*	a. All possible waste products (such as paper, cardboard, plastic, oil, etc) and sources of pollution produced by the farm processes have been listed. b. A comprehensive, current, documented plan that covers wastage reduction, pollution and waste recycling is available. Air, soil, water, noise and light contamination must be considered. c. Visual assessment that there is no evidence of breeding grounds in areas of waste/litter in the immediate vicinity of the production or storage buildings. Incidental and insignificant litter and waste on the designated areas are acceptable as well as the waste from the current day's work. All other litter and waste has been cleared up.		
5.1 Impact farming on environment and biodiversity a. Does each producer have a management of wildlife and conservation plan for the enterprise that acknowledges the impact of farming activities on the environment (m)? b. Has the producer considered how to enhance the environment for the benefit of the local community and flora and fauna (R)? c. Is this policy compatible with sustainable commercial agricultural production and does it minimize environmental impact of the agricultural activity (R)? d. Does the plan include a baseline audit to understand existing animal and plant diversity on the farm (R)? *Other Recommendations are not mentioned here but include:* *Plan includes actions to avoid damage or to enhance habit?* **5.2 Unproductive sites** e. Has consideration been given to the conversion of unproductive sites (e.g. low lying wet areas, woodlands,	a. There must be a written action plan which aims to enhance habitats and increase biodiversity on the farm. This can be either a regional activity or individual plan, if the farm is participating in or covered by it. b. There should be tangible actions and initiatives that can be demonstrated by the producer either on the production site or by participation in a group that is active in environmental support schemes looking at habitat quality and habitat elements. c. The contents and objectives of the conservation plan imply compatibility with sustainable agriculture and demonstrate a reduced environmental impact. d. There is a commitment within the conservation plan to undertake a base line audit of the current levels, location, condition etc. of the fauna and flora on farm so as to enable actions to be planned. The effects of agricultural production on fauna and flora should be audited and serve as the basis for the action plan. e. There should be a plan to convert unproductive sites and identified	a. This includes knowledge of IPM practices, of nutrient use of crops, conservation sites etc.	

headland strip or areas of impoverished soil) to conservation areas for the encouragement of natural flora and fauna (R)? **5.3 Energy efficiency** f. Can producer show monitoring of energy use on the farm (R)?	areas which give priority to ecology into conservation areas where viable. f. Energy use records exist. For example, farming equipment shall be selected and maintained for optimum consumption of energy. The use of non-renewable energy sources should be kept to a minimum. *Prior use includes: previous crops, industrial or military use, land fill or mining sites, natural vegetation*		
Complaints and traceability a. Is there a **complaint** procedure available relating to issues covered by the GLOBALGAP standard (M)? b. Does the complaints procedure ensure that complaints are adequately recorded, studied and followed up including a record of actions taken? **c. Traceability:** Do all producers have a documented recall procedure to manage the withdrawal of registered products from the market? D. Is GLOBALGAP registered product traceable back to and traceable from the registered farm (and other relevant registered areas) where it has been grown (M)?	a. There must be available on request, a clearly identifiable document for complaints relating to issues covered by GLOBALGAP. No N/A. b. There are documents of the actions taken with respect to such complaints regarding GLOBALGAP standard deficiencies found in products or services. No N/A. c. All producers must have access to documented procedures which identify the type of event that may result in a withdrawal, persons responsible for taking decisions on the possible withdrawal of product, the mechanism for notifying customers etc. The procedures must be tested annually to ensure that it is sufficient. d. There is a documented identification and traceability system that allows GLOBALGAP registered product to be traced back to the registered farm or, in a Farmer Group, to the registered farms of the group, and tracked forward to the immediate customer No N/A..	d. Harvest information must link a batch to the production records or the farms of specific producers. Produce handling must also be covered if applicable.	Information in General Regulations Part III for information on segregation.
7.1 Quality and health *Not further detailed* **7.2 Pest and disease resistance** *Not further detailed* **7.3 Chemical treatments and dressings** *Not further detailed* **7.4 Sowing and planting** *Not further detailed* **7.5 Genetically modified Organisms** A. Does the planting of or trials with GMO comply with all applicable legislation in the country of production (M)? b. Did the producer inform their direct clients of the GMO status of the product (M)? c. Are GMO crops stored separately from other crops to avoid adventitious mixing (M)? *Other minor must are not mentioned here but include: Availability of plan and documentation.* **7.6 Choice of variety** *Not further detailed* **7.7 Seed / rootstock quality and origin** *Not further detailed*	a. The registered farm or group of registered farms have a copy of the legislation applicable in the country of production and comply accordingly. Records must be kept of the specific modification and/or the unique identifier. Specific husbandry and management advice must be obtained. b. Documented evidence of communication must be provided. c. Visual assessment must be made of genetically modified (GMO) crops storage for integrity and identification.		
8.1 Soil mapping a. Have soil maps been prepared for the farm (R)? **8.2 Cultivation** b. Have techniques been used that improve or maintain soil structure, and to avoid soil compaction (R)? **8.3 Erosion** c. Are field cultivation techniques used to reduce the possibility of soil erosion (m)?	a. The type of soil is identified for each site, based on a soil profile or soil analysis or local (regional) cartographic soil-type map. b. Techniques applied are suitable for use on the land. There must be no evidence of soil compaction. c. There is visual evidence that there is no soil erosion or evidence of practices *Note in annex: type of soil should cover structural susceptibility to erosion, structural and chemical suitability for intended crops: Conformation and slope, land form, drainage patterns, wind exposure, erosion of the soil, transportation harvested crop*	c. Practices such as mulching and/or cross line techniques on slopes and/or drains and/or sowing grass or green fertilizers, trees and bushes on borders of sites, etc.	
9.1 Nutrient requirement a. Is the application of all fertilizers and manure timed to maximize the efficacy and/or uptake by target crops? **9.2 Advice on quantity and type of fertilizer** b. Are recommendations for application of fertilizers (organic or	a. Producer must demonstrate that consideration has been given to nutritional needs of the crop, soil fertility and residual nutrients on the farm and records must be available as evidence. No N/A b. Where the fertilizer records show that the technically responsible person making the choice of the fertilizer (organic or inorganic) is an	b. Demonstrated via official qualifications, specific training courses, etc.,	

inorganic) given by competent, qualified advisers holding a recognized national certificate or similar? Do producers who use outside professional help regarding the use of fertilizers satisfy themselves that the people on whom they rely are competent to provide that advice (m)? c. Where such advisers are not used, are producers able to demonstrate their competence and knowledge (m)? **9.3 Record of application** d. Have all applications of soil and foliar fertilizers, both organic and inorganic, been recorded including field, orchard or greenhouse reference (m)? *Other minor must are not mentioned here but include:* *Data, methods, type, operator details and quantity of applications* **9.4 Application machinery** e. Is fertilizer application machinery kept in good condition and verified annually to ensure accurate fertilizer application (m)? **9.5 Fertilizer storage** f. Is there an inorganic fertilizer stock inventory or record of use up to date and available on the farm (m)? g. Are inorganic and organic fertilizers stored separate from fresh produce/tea/coffee cherries (M)? *Other minor must are not mentioned here but include:* *Storage of organic and inorganic fertilizers* **9.6 Organic fertilizer** h. Has the use of human sewage sludge been banned on the farm (M)? *Other minor must are not mentioned here but include:* *Nutrient contribution and risk assessment* **9.7 Inorganic fertilizer** I. Are purchased inorganic fertilizers accompanied by documentary evidence of nutrient content (N, P, K) (m)? J. Are purchased inorganic fertilizers accompanied by documentary evidence of chemical content, which includes heavy metals (R)?	external adviser, training and technical competence must be demonstrated unless employed for that purpose by a competent organization. c. Where the fertilizer records show that the technically responsible person determining quantity and type of fertilizer (organic or inorganic) is the producer, experience must be complemented by technical knowledge or the use of tools. d. Records are kept of all fertilizer applications, detailing the geographical area, the name or reference of the field, orchard or greenhouse where the registered product crop is located. e. There are maintenance records (or invoices of spare parts of both the organic and inorganic fertilizer application machinery available on request. There must, as a minimum, be documented records stating that the verification of calibration has been carried out by a specialized company, supplier of fertilization equipment or by the technically responsible person of the farm within the last 12 months. f. A stock inventory which indicates the contents of the store (type and amount) is available and it is updated at least every 3 months. G. Fertilizers cannot be stored with fresh produce/tea and/or harvested coffee cherries. h. No human sewage sludge is used on the farm. No N/A. I. Documentary evidence detailing N, P, K content, is available for all inorganic fertilizers used on crops grown under GLOBALGAP within the last 12-month period. J. Documentary evidence detailing chemical content, including heavy metals, is available for all inorganic fertilizers used on crops grown under GLOBALGAP within the last 12-month period		
10.1 Predicting irrigation requirements a. Have systematic methods of prediction been used to calculate the water requirement of the crop (R)? **10.2 Irrigation / fertigation method** b. Can the producer justify the method of irrigation used in light of water conservation? *Other minor must are not mentioned here but include:* *Records of irrigation use, water management plan* **10.3 Quality of irrigation water** c. Has the use of untreated sewage water for irrigation/fertigation been banned (M)? d. Has an annual risk assessment for irrigation/fertigation water pollution been completed? *Other minor must are not mentioned here but include:* *Analysis of water quality (type, where, records)* **10.4 Supply of irrigation water** e. To protect the environment, is water abstracted from a sustainable source (m)? f. Has advice on abstraction been sought from water authorities,	a. Calculations are available and are supported by data records e.g. rain gauges, drainage trays for substrate, evaporation meters, water tension meters (% of moisture in the soil) and soil maps. b. The idea is to avoid wasting water. The irrigation system used is the most efficient available for the crop and accepted as such within good agricultural practice. c. Untreated sewage water is not used for irrigation/fertigation. Where treated sewage water is used, water quality complies with the WHO published Guidelines. Also, when there is doubt if water is coming from a possibly polluted source the grower has to demonstrate through analysis that the water complies with the WHO guideline requirements or the local legislation for irrigation water. No N/A. d. The risk assessment must consider potential microbial, chemical or physical pollution of all sources of irrigation/fertigation water. E. e. Sustainable sources are sources that supply enough water under normal (average) conditions. f. Where required by law, there must be written communication from the local water authority on this subject (letter, license, etc.).	d. Part of the risk assessment should consider the irrigation method and the crop, frequency of analysis, sources of water, the resources and susceptibility for pollutants and drain water of the sources and the environment	WHO published Guidelines for the Safe Use of Wastewater and Excreta in Agriculture and Aquaculture 1989. See Table 3 in Annex gives information on Risk Assessments.

where required by law?			
11. Integrated Pest Management a. Can the producer show evidence of implementation of at least one activity that falls in the category of "Prevention" (m)? b. Can the producer show evidence of implementation of at least one activity that falls in the category of "Observation and Monitoring" (m)? *Other minor must are not mentioned here but include: Categories as intervention, prevention + given assistance*	a. The producer can show evidence of implementing at least one activity that includes the adoption of cultivation methods that could reduce the incidence and intensity of pest attacks, thereby reducing the need for intervention. b. The producer can show evidence of implementing at least one activity that will determine when, and to what extent, pests and their natural enemies are present, and using this information to plan what pest management techniques are required.		See Annex of GLOBALGAP (EUREPGAP) IPM Guidelines.
12.1 Choice of plant protection products a. Is the plant protection product applied appropriate for the target as recommended on the product label (M)? b. Do producers only use plant protection products that are registered in the country of use for the target crop where such official registration scheme exists (M)? c. Is there a process that prevents chemicals that are banned in the European Union from being used on crops destined for sale in the European Union (M)? d. If the choice of plant protection products is made by advisers, can they demonstrate competence (M)? e. If the choice of plant protection products is made by the producer, can competence and knowledge be demonstrated? *Other minor must are not mentioned here but include: Invoices and lists of plant protection products* **12.2 Records of application** f. Have all the plant protection product applications been recorded including the crop name and/or variety (M)? g. Have all the plant protection product applications been recorded including the application location (M)? h. Have all the plant protection product applications been recorded including application date (M)? I. Have all the plant protection product applications been recorded including the product trade name (M)? *Other minor must are not mentioned here but include: Records include justification for application, technical authorization, machinery used…* **12.3 Pre-harvest interval** J. Have the registered pre-harvest intervals been observed (M)? **12.4 Application equipment** *Not further detailed here* **12.5 Disposal of surplus application mix** *Not further detailed here* **12.6 Plant protection residue analysis** *Not further detailed here* **12.7 Plant protection product storage** *Not further detailed here* **12.8 Plant protection product handling** *Not further detailed here* **12.9 Empty plant protection product containers** *Not further detailed here* **12.10 Obsolete plant protection products** *Not further detailed here*	a. All the plant protection products applied to the crop are suitable and can be justified (according to label recommendations or official registration body publication) for the pest, disease, weed or target of the plant protection product intervention. Technically valid (legal) "off label" uses that are supported by the PPP industry in writing is allowable. If the producer uses off-label PPP there must be evidence of official approval for use of that PPP on that crop in that country. No N/A b. All the plant protection products applied are officially registered or permitted by the appropriate governmental organization in the country of application. Where no official registration scheme exists, refer to the GLOBALGAP guideline (Annex CB.2) on this subject and FAO International Code of Conduct. Refer also to Annex CB.2 for cases where producer takes part in legal field trials for final approval of PPP by the local Government. No N/A. c. The documented plant protection product application records confirm that no plant protection product that have been used within the last 12 months on the crops grown under GLOBALGAP destined for sale within the E.U., has been prohibited by the E.U. d. Where the plant protection product records show that the technically responsible person making the choice of the plant protection products is a qualified adviser, technical competence can be demonstrated via official qualifications or specific training course attendance certificates. e. Where the plant protection product records show that the technically responsible person making the choice of plant protection products is the producer, experience must be complemented by technical knowledge that can be demonstrated via technical documentation. f. All plant protection product application records specify the crop and/or variety treated. No N/A. g. All plant protection product application records specify the geographical area, the name or reference of the farm, and the field, orchard or greenhouse where the crop is located. No N/A. h. All plant protection product application records specify the exact dates (day/month/year) of the application. Record the actual date (end date, if applied more than one day) of application. No N/A. I. All plant protection product application records specify the trade name or beneficial organism. It must be possible to connect the trade name information to the active ingredient. No N/A. J. The producer can demonstrate that all pre-harvest intervals have been observed for plant protection products applied to the crops, through the use of clear documented procedures such as plant protection product application records and crop harvest dates from treated locations.	J. Specifically in continuous harvesting situations, there are systems in place in the field, orchard or greenhouse, e.g. warning signs, time of application etc., to ensure compliance with all pre-harvest intervals.	b. GLOBALGAP guideline (Annex CB.2) on this subject and FAO International Code of Conduct on the Distribution and Use of Pesticides. c. Under EC Prohibition Directive List - 79/117/EC.
13.1 Hygiene machinery and equipment *Not further detailed here*			

14.1 Crop protection – choice of chemicals a. Are restrictions imposed by national / local legislation on plant protection product application methodology complied with (M)?	a. Where national or local legislation imposes restrictions on methods of plant protection product application (for example: distance to water ways while spraying etc.) producer		
15.1 Hygiene on harvesting			
16.1 Hygiene on harvested crop handling *Not further detailed here* **16.2 Quality control** *Not further detailed here* **16.3 Rodent and bird control** *Not further detailed here* **16.4 Post-harvest treatments** *Not further detailed here* **16.5 Storage of harvested crop** *Not further detailed here* **16.6 Haulage** *Not further detailed here*			

Sustainable Agriculture Network / Rainforest Alliance (crops)

General characteristics:	
Status:	In implementation
Geographical coverage:	Worldwide
Scope:	Crops. Certified crops include soy, sugarcane, sunflower, palm oil, bananas, citrus, cocoa, coffee, flowers and ferns.
Initiator system:	The Rainforest Alliance (RA) is an international environmental organization based in New York City. Rainforest Alliance provides two secretariats for the Sustainable Agriculture Network: The Standards & Policy Secretariat coordinates the development of standards and related policies for SAN and the Certification Secretariat administers the certification systems for the Sustainable Agriculture Certification Network (SANcert). The networks use the Rainforest Alliance certified™ seal, which has been granted since 1992 [15].

Short summary system or initiative:	Extension system:	
The Sustainable Agriculture Network/Rainforest Alliance is a coalition of non-profit, independent conservationist organizations that promotes the social and environmental sustainability of agricultural activities by developing a standard, and certifying farms that comply with that standard [8]. The SAN awards the Rainforest Alliance Certified eco-label to farms, not to companies or products [12].	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Y General and local indicators (developed by work groups) [54]
Context:		
The Mission is to improve environmental and social conditions in tropical agriculture through conservation certification [12].		
Status of system:		
Sustainable Agricultural Network provides certification services for farmers and agricultural companies in their respective countries, while offering knowledge and experience in working towards the development of the Sustainable Agriculture standard. Since 1992, almost 800 certificates for more than 31,000 farms have met the SAN standards on almost 600,000 ha for 22 crops [54]. Recently, in April 2009, SAN has released a document with additional criteria for oil palm, sugar cane, soy, peanut and sunflower farms [55].		
Planned activities:		
RA has stated that it is interested in developing standards for energy crops if demand for such certified produce arises. In that case, certified produce could be on the market in 2-4 years time [8].		

Structure system or initiative:	
Juridical basis:	Voluntary (label)
Participation in system:	Rainforest Alliance currently holds the Secretariat for the Sustainable Agriculture Network and coordinates the development and review of standards and related policies for the SAN. Rainforest Alliance also administers the Rainforest Alliance Certified™ trademark [54]. SAN representatives and their operating countries are: Conservación y Desarrollo (C&D), Ecuador; Fundación Interamericana de Investigación Tropical (FIIT); Guatemala; Fundación Natura, Colombia; ICADE, Honduras; IMAFLORA, Brazil; Pronatura Chiapas, Mexico; SalvaNatura, El Salvador and Rainforest Alliance. Rainforest Alliance is the operating member of the SAN for the time being in Africa and Asia [54]. All standards and criteria were developed with active stakeholder involvement through a public consultation process [12]. SAN's standard and policies development or review processes comply with the ISEAL Alliance Code of Good Practice for Setting Social and Environmental Standards [54].
Local stakeholder involvement	Policies and procedures must be developed to identify the interests of the local communities [54].
Monitoring performance:	-
Chain of custody system	A CoC system is necessary to avoid the mixing of products from certified farms with products from non-certified farms. Farmers may apply for certification for all land in production and companies may request that all of their source farms be certified [12].
Level of detail CoC	Rainforest Alliance is the Sustainable Agricultural Network Secretariat and

system:	administers the certification systems. The Sustainable Agricultural Network uses the Rainforest Alliance-certified seal [8]. Accreditation complies with ISO 65 (EN 45011). Auditor competency requirements clear and appropriate [8]. Verification and compliance: In order to obtain and maintain certification, the farmers must comply at least 80% with all criteria and 50% of each principle's applicable criteria. Full compliance with critical criteria is required [54]. Certification is valid for 3 calendar years and subject to annual audits. Farm audits are determined at whole farm level [56]. There are certification audits, annual audits (for progress), research audits, and verification audit, pre-audit and non-programmed audit. This includes annual unannounced visits [56]. Companies that buy or sell goods from Rainforest Alliance Certified farms before the goods are packaged for sale must first register on the online Rainforest Alliance Certified Marketplace™ in order to use the Rainforest Alliance Certified™ seal. Registered companies must identify the certified farm origin of their products and report the intended sales distribution for those products. When deemed appropriate by the Rainforest Alliance, registered companies receive a self-assessment to determine their level of risk in mixing certified and non-certified products. Based on the self assessment, a determination is made as to the need for a verification audit for CoC.

Further information on:	
Removal of trade barriers	
Costs:	Developing group certification option [8]. Cost information on SAN from [57]: - Certification audit costs depend on the size and location of the farm, the total number of producers in the group, the distance between farms, and the ability of producers to assume logistical costs related to the audit process. Usually two auditors do the field work. Local auditors are used whenever possible to reduce travel expenses. - Costs include professional fees for a team of 2 auditors, travel to audit site, report review and certification decision and administrative expenses. - Annual fees are calculated based on the number of productive hectares. - Group certification has a rate of $5/ hectare and farms $7.5/ hectare. **Stage of Certification** — **Cost /Range of Costs** Initial Application — Fee none Initial Certification Costs — Varies based on size of operation and location License Fee — none Cost of Recertification — Cost is less due to fewer audit days Other Costs — Annual fee: $5 ha/year for groups, $7.5 ha/ years for farms

The SAN standard consists of a list of general principles [54]. Additionally, criteria for oil palm, sugar cane, soy, peanuts and sunflower farms are developed [55]. The criteria and principles listed here include the latter. The document starts with a summary of each principle.

The standard has 10 principles which apply to all its certified crops [8, 54, 55]:	
1	Social and Environmental Management System.
2	Ecosystem Conservation.
3	Wildlife Protection.
4	Water Conservation.
5	Fair Treatment and Good Working Conditions for Workers.
6	Occupational Health and Safety.
7	Community Relations.
8	Integrated Crop Management
9	Soil Management and Conservation.
10	Integrated Waste Management.

Criteria [54, 55]: (C) = Critical criterion, (ADD) = Additional for soy, sugarcane, (SUB) = substitution of General criteria by SAN Addendum	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
1.1 The farm must have a social and environmental management system according to its size and complexity of its operations **1.2** The farm must implement permanent or long-term activities to comply with the standard through various programs. **1.3** The farm's upper management must demonstrate a commitment to certification and to complying with the requirements stipulated in the standard and by law. The management must also be familiar with and endorse the system and its programs and support its execution by providing the necessary resources. **1.4** The objectives and a summary of the social and environmental management system and its programs must be available and made known to workers. **1.5** The farm must keep in its offices or facilities all documentation and records created for the social and environmental management system, as well as documents proving compliance with the standard, for at least three years or for the alternative time indicated in this standard. **1.6** The potential social and environmental impacts of new works or activities must be evaluated. **1.7** The farm must have the necessary processes for follow up, measurement and analysis, including that of claims by workers or other persons or groups, to evaluate the functioning of the social and environmental management system and farm compliance with applicable laws and the standard. **1.8** The farm's service providers must commit to complying with the environmental, social and labor requirements of this standard, not only while operating on the farm but also for any outside activities related to the services provided. **1.9** The farm must implement a training and education program in order to guarantee the effective execution of the social and environmental management system and its programs. The training topics must be identified according to the standard, the position, and type of work carried out. **1.10** The farm must have a system for avoiding the mixing of certified products with non-certified products in its facilities, including harvesting, handling, processing and packaging of products, as well as transportation. All transactions involving certified products must be recorded. Products leaving the farm must be duly identified and accompanied with the relevant documentation indicating a certified farm as origin (C). **1.11** The farm must annually describe its energy sources and the amount of energy used from each source for production processes, transport and domestic use within the farm limits. The farm must have an energy efficiency plan with goals and implementation activities for increased efficiency, for reducing dependency on non-renewable sources and for increasing the use of renewable energy. Where appropriate, the use of on-farm energy sources must be preferred (ADD).	**1.1** Containing the necessary policies, programs and procedures that prove compliance with this standard and respective national legislation binding for social, labor and environmental aspects on farms – whichever is stricter. **1.2** Social and environmental management system programs must consist of the following elements: a. Short-, medium- and long-term objectives and goals. b. A list of activities to be conducted in each program, and a timeline or plan indicating when they will be implemented. c. Identification of the persons responsible for carrying out the activities. Etc. *Not all listed here* **1.5** These documents must be readily available to the persons responsible for carrying out the social and environmental management plan's various programs and activities. **1.6** These include the expansion of production areas, the construction or installation of new infrastructure, or major changes in production or processing systems. The evaluation must be carried out before the initiation of any changes or new work in accordance with applicable laws or, in their absence, based on technically accepted and recognized methods. Any evaluation must include procedures for monitoring and evaluating the significant impacts identified and not foreseen during the development of new works or activities. **1.7** The continual improvement program must include the necessary corrective actions to rectify non-compliance situations, as well as the mechanisms needed to determine if the actions are implemented and if they result in improvements or need to be adjusted to produce the desired results. The results of these processes must be recorded and incorporated into the social and environmental management system through a continual improvement plan and program. **1.8** The farm must have mechanisms for evaluating its service providers and checking that they are complying with this standard. The farm must not use the services of suppliers or contractors that do not comply with the social, labor and environmental requirements of this standard. **1.9** Records must be kept that include the participants' signatures, topics covered and the instructor's name for each training or educational event. The required training must be paid as part of the normal workday.		
2.1 All existing natural ecosystems (aquatic and terrestrial) must be identified, protected and restored through a conservation program (C). **2.2** From the date of application for certification onwards, the farm must not destroy any natural ecosystem. Additionally, from November 1, 2005 onwards no high value ecosystems must have been destroyed by or due to purposeful farm management activities (SUB). **2.3** Production areas must not be located in places that could provoke negative	**2.1** The program must include the restoration of natural ecosystems or the reforestation of areas within the farm that are unsuitable for agriculture. **2.2** If any natural ecosystems have been destroyed by or due to purposeful farm management activities between November 1, 1999 and November 1, 2005, the farm must implement the following analysis and mitigations:		Annex provides information about distances between farm area and ecosystem based on type of farm, input level and slope.

effects on national parks, wildlife refuges, biological corridors, forestry reserves, buffer zones or other public or private biological conservation areas. **2.4** The harvesting or other taking of threatened or endangered plant species is not permitted. Cutting, extracting or harvesting trees, plants and other non-timber forest products is only allowed in instances when the farm implements a sustainable management plan that has been approved by the relevant authorities, and has all the permits required by law. If no applicable laws exist, the plan must have been developed by a competent professional (SUB). **2.5** There must be a minimum separation of production areas from natural terrestrial ecosystems where chemical products are not used. A vegetated protection zone must be established by planting or by natural regeneration between different permanent or semi-permanent crop production areas or systems. **2.6** Aquatic ecosystems must be protected from erosion and agrochemical drift and runoff by establishing protected zones on the banks of rivers, permanent or temporary streams, creeks, springs, lakes, wetlands and around the edges of other natural water bodies. **2.7** The farm must establish and maintain vegetation barriers between the crop and areas of human activity, as well as between production areas and on the edges of public or frequently traveled roads passing through or around the farm. **2.8** Farms with agroforestry crops located in areas where the original natural vegetative cover is forest must establish and maintain a permanent agroforestry system distributed homogenously throughout the plantations. Farms in areas where the original natural vegetation is not forest –as grasslands, savannas, scrublands or shrublands - must dedicate at least 30% of the farm area for conservation or recovery of the area's typical ecosystems. These farms must implement a plan to establish or recover natural vegetation within 10 years. **2.9** The farm must implement a plan to maintain or restore the connectivity of natural ecosystems, within its boundaries, considering connectivity of habitats at the landscape level (ADD).	a. Conduct an analysis of the ecosystem destruction to document the scope and ecological impact of the destruction. b. Develop a mitigation plan with advice from a competent professional that is consistent with applicable legislation and that compensates for the negative impact. c. Implement the activities of this mitigation plan, including for example the set aside of a significant percentage of the farm area for conservation purposes. **2.5** The separation between production areas and ecosystems as defined in Annex must be respected. **2.6** Distances between crop plants and aquatic ecosystems as indicated in Annex must be respected. Farms must not alter natural water channels to create new drainage or irrigation canals. Previously converted water channels must maintain their natural vegetative cover or, in its absence, this cover must be restored. The farm must use and expand vegetative ground covers on the banks and bottoms of drainage canals. **2.7** These barriers must consist of permanent native vegetation with trees, bushes or other types of plants, in order to promote biodiversity, minimize any negative visual impacts and reduce the drift of agrochemicals, dust and other substances coming from agricultural or processing activities. The distance between the crop plants and areas of human activity as defined in Annex must be respected. **2.8** The agroforestry system's structure must meet the following requirements: a. The tree community on the cultivated land consists of minimum 12 native species per hectare on average. b. The tree canopy comprises at least two strata or stories. c. The overall canopy density on the cultivated land is at least 40%. **2.9** e.g. through elements such as native vegetation on roadsides and along water courses or river banks, shade trees, live fences and live barriers		
3.1 An inventory of wildlife and wildlife habitats found on the farm must be created and maintained. **3.2** Ecosystems that provide habitats for wildlife living on the farm, or that pass through the farm during migration, must be protected and restored. The farm takes special measures to protect threatened or endangered species. **3.3** Hunting, capturing, extracting and trafficking wild animals must be prohibited on the farm (C). **3.4** The farmer must keep an inventory of the wild animals held in captivity on the farm, and implement policies and procedures to regulate and reduce their tenancy. Endangered or threatened species must not be held in captivity. **3.5** The farm is allowed to breed wild animals in captivity when the farm has the required conditions and the permits stipulated by law. **3.6** Farms that reintroduce wildlife into natural habitats must have the appropriate permit from the relevant authorities and comply with the conditions established by law, or reintroduce the animals via duly authorized and established programs.	**3.3** Cultural or ethnic groups are allowed to hunt or collect fauna in a controlled manner and in areas designated for those purposes under the following conditions: a. The activities do not involve species in danger of or threatened with extinction. b. There are established laws that recognize the rights of these groups to hunt or collect wildlife. c. Hunting and collection activities do not have negative impacts on the ecological processes or functions important for agricultural and local ecosystem sustainability. d. The long-term viability of the species' populations is not affected. e. These activities are not for commercial purposes. **3.5** These activities must be supervised by a competent professional. **3.6** A competent professional must advise the farm on release practices. Exotic wildlife must not be introduced into the farm.		
4.1 The farm must have a water conservation program that ensures the rational use of water resources. The program activities must make use of the best available technology and resources. It must consider water re-circulation and reuse, maintenance of the water distribution network and the minimizing of water use.	**4.1** The farm must keep an inventory and indicate on a map the surface and underground water sources found on the property. The farm must record the annual water volume provided by these sources and the amount of water consumed by the farm. **4.3** The farm must demonstrate that the water quantity and the duration	**4.5** Set of parameters: * Biochemical Oxygen Demand: < 50 mg/l * Total suspended solids: < 50 mg/l	

4.2 All surface or underground water exploited by the farm for agricultural, domestic or processing purposes must have the respective concessions and permits from the corresponding legal or environmental authorities. **4.3** Farms that use irrigation must employ mechanisms to precisely determine and demonstrate that the volume of water applied and the duration of the application are not excessive or wasteful. **4.4** The farm must have appropriate treatment systems for all wastewaters it generates. The treatment systems must comply with applicable national and local laws and have the respective operating permits. **4.5** The farm must not discharge or deposit industrial or domestic wastewater into natural water bodies without demonstrating that the discharged water complies with the respective legal requirements, and that the wastewater's physical and biochemical characteristics do not degrade the receiving water body (C). The mixing of wastewater with uncontaminated water for discharge into the environment is prohibited. **4.6** Farms that discharge wastewater continuously or periodically into the environment must establish a water-quality monitoring and analysis program that takes into account potential contaminants and applicable laws. **4.7** The farm must not deposit into natural water bodies any organic or inorganic solids, such as domestic or industrial waste, rejected products, construction debris or rubble, soil and stones from excavations, rubbish from cleaning land, or other materials (C). **4.8** The farm must restrict the use of septic tanks to the treatment of domestic wastewater (grey water and sewage) and non-industrial wastewater to prevent negative impacts on underground or surface water. **4.9** If total or partial compliance with the requirements of this standard that relate directly or indirectly to the contamination of natural water bodies cannot be proven, the farm must conduct a surface-water quality monitoring and analysis program.	of the application are based on climatic information, available soil moisture, and soil properties and characteristics. The irrigation system must be well designed and maintained so that leakage is avoided. **4.4** There must be operating procedures for industrial wastewater treatment systems. All packing plants must have waste traps that prevent the discharge of solids from washing and packing into canals and water bodies. **4.5** If legal requirements do not exist, the discharged wastewater must comply with a set of minimum water quality parameters: **4.6** The program must indicate the wastewater sampling points and frequency and the analyses to be carried out. A legally accredited laboratory must conduct all analyses. Laboratory results must be kept on the farm for at least three years. The program must comply with a set of minimum requirements for analysis and sampling. **4.8**The tanks and their drainage systems must be located in soils suitable for this purpose. Their design must coincide with the volume of wastewater received and treatment capacity, and must permit periodic inspections. Wastewater from the washing of machinery used for agrochemical applications must be collected and must not be mixed with domestic wastewater or discharged to the environment without previous treatment. **4.9** The program must indicate the sampling points and frequency, and must be continued until it can be proven that farm activities are not contributing to the degradation of the quality of the receiving water bodies. This does not exclude monitoring and water-analysis obligations stipulated by law or as indicated by local authorities. A minimum of analyses must be conducted. Additional analyses may be required as a result of the types of contamination identified during the audit.	* pH: between 6 and 9 * Grease and oils: < 30 mg/l * Fecal coliforms: absent **4.6** Requirements here given for wastewater discharge rate of 50-100 m^3/day: * Biochemical Oxygen Demand: half-yearly * Total suspended solids: weekly * pH: weekly * Grease and oils: half-yearly * Fecal coliforms: half-yearly **4.9** Analysis required: Suspended soils, total nitrogen, phosphorus compounds (during rainiest month of year) and specified pesticides (just after pesticide application re-entry period)	
5.1 The farm must have a social policy that declares its commitment to complying with labor laws and international agreements indicated in this standard. **5.2** The farm must not discriminate in its labor and hiring policies and procedures along the lines of race, color, gender, age, religion, social class, political tendencies, nationality, syndicate membership, sexual orientation, civil status or any other motive. The farm must offer equal pay, training and promotion opportunities and benefits to all workers for the same type of work. The farm must not influence the political, religious, social or cultural convictions of workers. **5.3** The farm must directly hire its workforce, except when a contractor is able to provide specialized or temporary services under the same environmental, social and labor conditions required by this standard. The farm must not establish relations or contracts with third parties, form or directly participate in employee-owned companies, or use other mechanisms to avoid the direct hiring of workers and the obligations normally associated with labor contracts. Employment of foreign workers must be subject to a work permit issued by the competent government agency. The farm must not ask for money from workers in return for employment. **5.4** The farm must have payment policies and procedures that guarantee the complete payment of workers on the dates agreed upon in the labor contract. Payment must take place at the workplace, or by another arrangement agreed upon by the worker. The farm must provide the worker with a detailed and comprehensive explanation of the salary paid and of any deductions made,	**5.1**The policy must summarize the rights and responsibilities of the administration and workers, with emphasis on labor aspects, living conditions, basic services, occupational health and safety, training opportunities and community relations. The social policy must be approved by the farm's upper management and be divulged and made completely known and available to the farm's workforce. **5.4** Farms with 10 or more full or part-time permanent employees must maintain an up-to-date written payroll and job description for each employee with the following information, which employees must have access to: a. Worker's name, national identity card number, and position, b. Job description + assigned salary, c Minimum salary established by the government according to the type of activity, d Weekly working hours established by applicable laws for the type of activity, and a comparison with the number of hours assigned each worker, e. Job requirements, for example, training or special skills, f. Payment dates, g. Gross pay for normal hours, h. Gross pay for overtime, i. Total pay: normal and overtime, j. Legal deductions and other deductions agreed upon by the worker, k. Net pay. **5.5** In cases where the salary is negotiated through collective bargaining or other pact, the worker must have access to a copy of this document during the hiring process. For production, quota or piecework, the established pay rate must allow workers to earn a minimum wage based on an eight-hour workday under average working conditions, or in cases where these conditions cannot be met.	**5.15** Or in their absence, with the following critical parameters defined by the WHO: * Fecal Coliforms: 0 * Chlorine residue or residue from other treatment disinfectants: 0.2 to 0.5 mg/L * Nitrates: 10 mg/L as nitrates * pH: 6.5 to 8.5 * Sodium: 20 mg/L * Sulphates: 250 mg/L * Turbidity: Less than or equal to 5 NTU	**5.2** As indicated by applicable laws, ILO Conventions 100 and 111, and this standard. **5.8** ILO Conventions have been ratified, the farm must adhere to Convention 138, Recommendation 146 (minimum age). **5.10** International Labor Organization (ILO) Conventions 29 and 105 and national labor laws.

allowing the worker to appeal in the case of perceived discrepancies. **5.5** Workers must receive pay in legal tender greater than or equal to the regional average or the legally established minimum wage, whichever is greater, according to their specific job (C). **5.6** Working hours, rest periods during the workday, the number of annual paid vacation days, holidays, and rest days must comply with current labor laws and with a set of minimum conditions. These rights and benefits must be made known to the workers and included in any labor contract or collective agreement. **5.7** All overtime must be voluntary. The farm must have policies and procedures relating to the requirements and assignation of overtime that conform to current labor laws. These policies and procedures must be made known to workers when they are hired. **5.8** It is prohibited to directly or indirectly employ full- or part-time workers under the age of 15. In countries where the ILO Conventions have been ratified, the farm must adhere to Convention 138, Recommendation 146 (minimum age). **5.9** When applicable laws permit, minors between 12 and 14 years old may work part-time on family farms, only if they are family members or neighbors in a community where minors have traditionally helped with agricultural work. The schedule for these minors including school, transportation and work must not exceed ten hours on school days or eight hours on non-school days, and must not interfere with educational opportunities. **5.10** Any type of forced labor is prohibited, including working under the regimen of imprisonment, in agreement with International Labor Organization (ILO) Conventions 29 and 105 and national labor laws. **5.11** The farm and supervisors must not threaten, sexually abuse or harass, or verbally, physically or psychologically mistreat workers for any reason. The farm must encourage the respectful treatment of workers and have a formal mechanism to act upon workers' claims of mistreatment. **5.12** Workers must have the right to freely organize and voluntarily negotiate their working conditions in a collective manner as established in ILO Conventions 87and 98. The farm must have and divulge a policy guaranteeing this right and must not impede workers from forming or joining unions, collective bargaining or organizing for ideological, religious, political, economical, social, cultural or any other reasons. The farm must periodically provide opportunities for workers to make decisions regarding their rights + alternatives to form any type of organization for negotiating their working conditions. **5.13** The farm must inform permanent and regular seasonal workers - and the workers organizations that represent them - of any plans for changes in farm management activities or organizational structure with potentially significant social, environmental and economic effects (SUB). **5.14** Housing provided by the farm for permanent or temporary workers living there must be well-designed, built and maintained to foster good hygienic, health and safety conditions. **5.15** All workers of the farm and persons living on the farm must have access to potable water. Sufficient supply of potable water must be provided to all workers and must be available at the work site. The farm must be able to demonstrate that the water provided complies with the physical and chemical parameters and other characteristics established in applicable laws. Non-family farms that obtain water from their own sources - water not supplied by aqueducts managed by other entities - must have a periodic drinking water	**5.6** Minimum conditions: a. The maximum number of hours worked per week must not exceed 48, b. Workers must have a minimum of 24 consecutive hours rest (one day off) for every six consecutive days worked, c. All workers must have the right to annual paid vacation equivalent to a minimum of one day for each month worked (12 days or 2 work weeks per year) or the equivalent for part-time workers. **5.7** Overtime must not exceed 12 hours per week. Overtime hours must be paid at a higher rate than normal working hours. When current labor laws permit, this standard allows for an exception period during which the maximum 60 hours (48 normal hours plus 12 overtime hours) per week can be exceeded during seasonal activities or due to unforeseen circumstances, under a set of given conditions. *These conditions are not described here.* **5.8** Farms contracting minors between the ages of 15 and 17 must keep a record of the following information for each minor: a. First and last name, bb. Date of birth (day, month and year), c c. First and last name of parents or legal guardian, etc. Workers between 15 and 17 years old must not work more than eight hours per day or more than 42 hours per week. Their work schedule must not interfere with educational opportunities. These workers must not be assigned activities that could put their health at risk, such as the handling and application of agrochemicals or activities that require strong physical exertion. **5.9** A set of minimum conditions must be fulfilled. *These conditions are not described here.* **5.10** The farm does not withhold any part or all of workers' salaries, benefits or any rights acquired or stipulated by law, or any of the workers' documents, in order to force them to work or stay on the farm, or as a disciplinary action. The farm does not use extortion, debt, threats or sexual abuse or harassment, or any other physical or psychological measure to force workers to work or stay on the farm, or as a disciplinary measure. **5.13** a. Workers who will be replaced by the use of machines or for any other reason due to significant changes in farm management activities or organizational structure must be given priority consideration for opportunities to be contracted in other labors on the farm and must be trained for those new tasks. b. In confirmed cases of job loss and lack of employment opportunities, the farm must provide economic compensation for workers according to national labor legislation. In the absence of national legislation, the labor contract for permanent or seasonal workers must include a severance provision. **5.14** Living quarters must be separated from production areas. The farm must seek alternatives for relocating housing or camps that are currently within production areas. Workers and their families living on the farm must have access to recreation areas according to the composition of inhabitants. The design, size and construction of dormitories, barracks and other housing, type and quantity of furniture, and number and location of sanitary facilities, showers, and washing and cooking areas must comply with applicable laws. In absence of applicable laws required set of elements and characteristics apply. *Required size and facilities given in standard not included here.* **5.15** Analysis program includes: a. Identification of water sources on a map and on the farm.		

monitoring and analysis program. **5.16** All workers and their families must have access to medical services during working hours and in case of emergency. When legislation requires, farms must contract the services of a doctor or nurse with the necessary equipment to provide these services. **5.17** The farm must have mechanisms to guarantee access to education for the school-age children that live on the farm. Schools established and administered by certified farms must have the necessary resources, personnel and infrastructure to be able to provide an educational experience that complies with national legal requirements. **5.18** The farm must implement an educational program directed towards administrative and operative personnel (farm workers) and their families that encompasses three topics. **5.19** In those regions or countries where families traditionally harvest specific crops and where national laws do permit it, minors can participate in harvesting under a set of conditions. *Conditions in standards not listed here.*	b. Policies / procedures for guaranteeing protection of water sources. c. Sampling procedures and sampling locations and frequency. d. Analyses conducted by a legally recognized laboratory e. A record of the results for the last 3 years or since certification process was initiated. Additional analysis may be requested to ensure quality if evidence of direct or indirect contamination of surface or underground water exists. **5.18** Topics include the general objectives and requirements of Rainforest Alliance Certified™ certification; environmental and conservation topics related to this standard; and fundamental health and hygiene concepts. The program must be designed for the culture, language and educational level of those involved.		
6.1 The farm must have an occupational health and safety program with the principal objective being to identify and minimize or eliminate workers' occupational risks. **6.2** The farm must have a permanent and continuous training program to educate workers on how to carry out their work correctly and safely, especially regarding the handling of machinery and agricultural equipment. Workers must be familiar with the training requirements for their job, and must be trained before starting work on the farm. **6.3** All workers that apply, handle, transport or come into contact with agrochemicals or other chemical substances must be trained in at least a series of defined subjects. **6.4** Workers that carry out activities identified as being dangerous or a health risk in the occupational health and safety program, or those that require special skills such as the handling and application of agrochemicals, carrying heavy loads, harvesting manually or using agricultural machinery or equipment, must receive a medical check-up at least annually to assure their physical and mental capacities for such work. Workers must have access to the results of their medical examinations (SUB). **6.5** Personnel who apply or handle agrochemicals must have examinations necessary to determine the potential effects of the agrochemicals they handle before initiating such activities on the farm. The examination results must be documented in a manner in which information is easily found. Workers must have access to the examination results and must be assigned to other activities if the recommendations indicate that they are unfit to apply these products. **6.6** The farm must provide workers in all work areas with the basic services, resources and working conditions necessary to comply with the occupational health and safety program objectives and with the safety, health, and cleanliness requirements of applicable laws and this standard. **6.7** The farm must maintain strict safety standards in workshops and storage areas in order to reduce the possibility of accidents. Farms must have mechanisms to manage and control access to these areas and workers must have knowledge of them. The farm must assign and train personnel responsible for managing distribution of materials and for controlling access to storage areas. Materials must be stored separately according to their characteristics. **6.8** Workshops and storage facilities of all substances but agrochemicals or	**6.1** The program must have the policies, procedures, personnel and the resources necessary for reaching its objectives. It must also comply with applicable national laws and with this standard and be known and understood by the workers. The workers must be involved with reviewing the policies, procedures and other activities indicated in the program to ensure compliance. An occupational health committee must be established on farms with ten or more permanent production and processing workers. A written procedure is required for selecting committee members, and records must be kept for committee meetings and actions taken. **6.2** On farms with >10 permanent production and processing workers, farm must keep a written record of each training session. **6.3** Defined subjects are a.o. general occupational health, Interpretation of the pesticide labels and of the Material Safety Data Sheet (MSDS) for the substances used, etc. Only persons with proven knowledge and experience in the subject must carry out the training. Farms with >10 permanent workers in production or processing must document for each training event the objectives, topics, the workers or positions that must attend training, the training materials used, the frequency and duration, and the list of participants. **6.4** Those workers who either express or are observed having medical or mental health issues, must have the timely attention of and, as indicated, treatment by medical personnel - with the authority to find that a worker is unfit for the specific job he/she is doing and he/she needs job reassignment. Farm management must implement actions to avoid medical disorders of farm workers caused by harvest and other labor practices. Adequate rehydration must be provided at all times. **6.5** These workers must not suffer from chronic diseases, hepatitis or renal diseases, or respiratory diseases nor have been declared mentally challenged. Only males between the ages of 18 and 60 are permitted to apply agrochemicals. **6.6** Farms must provide facilities for human hygiene purposes in all sites with worker presence that is out of reach of administrative infrastructure. The farm must consult workers about the provided services, resources and working conditions, and demonstrate that they take into account the results of these consultations. The farm must		WHO's categories Ia, Ib and II technical grade active ingredients of pesticides.

flammable must be designed, constructed and equipped to reduce the risk of accidents and negative impacts on human health and the environment. **6.9** Those areas used for the storage and distribution of agrochemicals or flammable and toxic substances must be designed, constructed and equipped to reduce the risk of accidents and negative impacts on human health and the environment. **6.10** The farm must store agrochemicals in a manner that minimizes potential negative impacts on human health and on the environment. The farm must store only the amount of agrochemicals necessary to meet short-term needs. These products must be separated according to their biocide, toxicity and chemical formula. They must not be stored on the floor nor come within contact with absorbent materials. A Material Safety Data Sheet must be kept in the storage facility for each chemical product stored. *Also mentioned here: information about storage agrochemical containers.* **6.11** The farm must demonstrate that the locations of agrochemical and fuel storage areas comply with applicable laws. If applicable legislation does not exist and if the design, construction and management of these facilities do not comply with some or all of the requirements indicated in Criteria 6.7 to 6.10, a set of required separations must be maintained *(not listed here).* **6.12** The farm must take permanent measures to reduce the risk of accidents or spills of agrochemicals during their transportation to and within the farm. Vehicles used for transporting chemicals must be in a good state of repair, legally registered and have insurance policies designed for these services. The persons in charge of transporting agrochemicals must demonstrate that they know how to safely transport and handle the substances. **6.13** All workers that come into contact with agrochemicals, including those who clean or wash clothes or equipment that has been exposed to agrochemicals, must use personal protection equipment. The farm must provide this equipment in good condition, and must provide incentives to workers to use the equipment (C). **6.14** The farm must have the necessary safety measures for the protection of workers applying agrochemicals in the field. **6.15** The farm must take permanent actions to protect workers, neighbors and other persons from the effects of the application of agrochemicals and biological or organic inputs. **6.16** The farm must have showers and changing rooms for all persons that apply or come in contact with agrochemicals. **6.17** Clothes worn while applying agrochemicals must never be washed in the workers' homes. Handling and safety procedures must be established for transferring or transporting contaminated clothing from the shower area to the laundry room. **6.18** The farm must identify and analyze the types of potential emergencies that could occur on the farm according to its operations and environment. The farm must have an emergency response plan with actions and documented procedures for responding to all identified emergencies. **6.19** The farm must have accessible the necessary equipment for preventing and responding to the different types of emergencies identified in the emergency response plan. **6.20** Farms must implement documented procedures for protecting workers in the event of an extreme weather event.	provide the necessary protective equipment, and require its usage, for all machinery etc considered dangerous. **6.7** Personal protection equipment must not be stored with chemical substances. A current inventory of materials must be maintained and only the quantities of materials necessary to guarantee the continuity of work on the farm must be stored. **6.8** All of these areas must be used exclusively for designated purposes and must have signs inside and outside that indicate the types of SAN Sustainable Agriculture substances stored, the dangers they present, and precautionary measures to be taken in the area. The design, construction and equipping of these facilities must comply with applicable laws or with a set of defined parameters *(not included in this list)* whichever are stricter. **6.9** These areas must be used exclusively for these purposes. Fuels and other flammable substances must not be stored with agrochemicals. All of these areas must have signs legible at a distance of 20 meters to indicate the types of substances stored, the dangers they present and precautionary measures to be taken in the area. The farm must ensure that all conditions comply with applicable laws or with a set of parameters *(not listed here)* whichever are stricter. **6.12** All agrochemicals must be transported to the farm in their original containers and accompanied by a copy of their Material Safety Data Sheet. The farm must only transport to the production areas the quantity of agrochemicals necessary for that day's work. Chemicals must be transported in properly labeled plastic containers that are then returned to storage facility after use. Mobile agrochemical application equipment must be transported empty to the application area. **6.13** The equipment must reduce contact with the agrochemicals and the possibility of acute or chronic poisoning, and must comply with the strictest of the following requirements: a) the requirements indicated on the products' Material Safety Data Sheet, b) any applicable laws; or c) the equipment indicated in Annex of this standard. **6.14** A supervisor must check, at least every 3 hours, all workers applying WHO's categories Ia, Ib and II technical grade active ingredients of pesticides (see Annex). Workers must not apply agrochemicals for more than 6hours per day in order to limit their exposure to agrochemicals and to minimize the risk of accidents. **6.15** A list of actions is given. For products that do not have restricted entry periods in the Material Safety Data Sheet, a set of restricted entry intervals must be applied *(not given here).* **6.16** There must be policies and procedures that require that all workers that apply agrochemicals shower and change their clothes immediately after finishing the application and before leaving the farm at the end of the workday. There must be exclusive and separate areas for washing personal protection equipment and for washing application equipment. **6.18** All workers must be familiar with the emergency response measures relating to their areas of work and responsibilities. The farm must have workers trained in first aid available on each shift. **6.20** When harvesting at night, farms must provide constant lighting. Only in the case of monoculture crops with an average plant height lower than two meters, farms must provide shelter for shade and protection from extreme weather conditions, such as heavy rain and lightning.		

7.1 The farm must respect areas and activities that are important to the community socially, culturally, biologically, environmentally and religiously. These must not be affected by farm activities. **7.2** The farm management must implement policies and procedures for identifying and considering the interests of local populations and community interest groups regarding farm activities or changes that could have an impact on their health, employment or local natural resources. The farm must document and make available for public view all complaints and comments it receives related to its activities and its replies to them (SUB) (C). **7.3** The farm must have policies and procedures for prioritizing the hiring and training of a local labor force and for contracting and acquiring local services and products. **7.4** The farm must contribute to the protection and conservation of community natural resources, collaborate with the development of the local economy, and contribute fairly towards the costs of the community infrastructure and local shared resources consumed – schools, pathways, aqueducts and other infrastructure as well as water and other resources – according to the amount used by the farm. Farms must negotiate a fair compensation with local communities and local and national authorities for resources and infrastructure used. **7.5** The farm must help with local environmental education efforts and must support and collaborate with local research in areas related to this standard. The farm must have a legitimate right to land use and tenure, demonstrated by presenting the appropriate official documentation.	**7.5** If there is no such documentation the farm must show either: a. Absence of significant disputes on land use, tenure and access, or b. The consent of local communities, regarding the land, natural and agricultural resources.		
8.1 The farm must have an integrated pest-management (IPM) program based on ecological principles for the control of harmful pests (insects, plants, animals and microbes). **8.2** The farm must demonstrate by comparative agrochemical inventories and use records that it rotates chemical products and reduces their use for crop production. The agrochemical inventory on the farm must include, as a minimum requirement, the commercial and generic product names, the quantities acquired and the purchase dates. **8.3** The farm must implement the procedures and have the necessary equipment for mixing and applying agrochemicals, as well as maintain, calibrate and repair application equipment, in order to reduce to a minimum waste and excessive applications. The farm must designate and train personnel who will be responsible for the implementation of these procedures. **8.4** A list of given chemical or biological substances cannot be used on certified farms (C). List of Prohibited Pesticides – Sustainable Agriculture Network is binding for the inserts 8.4.c, 8.4.d, 8.4.e and 8.4.f of this criterion. **8.5** The farm must have a plan for eliminating the use of World Health Organization Class Ia and Ib technical grade active ingredients of pesticides, and for reducing the use of World Health Organization Class II technical grade active ingredients of pesticides. **8.6** The farm must take steps to avoid introducing, cultivating or processing transgenic crops. When nearby transgenic materials are accidentally introduced into a certified farm's crop, the farm must develop and execute a plan to isolate the crops and provide follow-up in order to comply with the requirements of this criterion (C). **8.7** Farms must only use fumigation methods for post-harvest treatment that minimize health effects in workers and control applications. **8.8** ***Only for sugarcane:*** Farms that harvest sugarcane with machines are not allowed to use fire for harvest preparation. All other farms – employing manual	**8.1** The program must give priority to the use of physical, mechanical, cultural and biological control methods, and the least possible use of agrochemicals. The program must include activities for monitoring pest populations, training personnel that monitor these populations, and integrated pest management techniques. **8.2** For field applications, the farm must record the following information: a. Products applied and application dates, b. Identification of the area where the application was made (on a map or clearly identified by the name or number of the plot), etc (*not complete list given here*). The information from records must be summarized and analyzed to determine application trends for specific products during the last five years. **8.4** a. Biological or organic substances that are not legally registered in the country for commercial use, b. Agrochemicals that are not registered officially in the country, c. Agrochemicals that are mentioned in the List of Banned and Severely Restricted Pesticides in the U.S. by its Environmental Protection Agency (EPA) or pesticides banned or severely restricted in the European Union, d. Substances that have been banned globally under the Stockholm Convention on Persistent Organic Pollutants, e. Substances listed in Annex III of the Rotterdam Convention on Prior Informed Consent (PIC), in relation to national bans or severe restrictions for documented health or environmental reasons in at least two regions of the World, f. All Pesticide Action Network Dirty Dozen substances. **8.5** Farms that do use the formerly mentioned ingredients must demonstrate the following: a. No technically or economically viable alternatives do exist for the type of pest or infestation, b. The pest or infestation has had, or would have had, proven significant economic consequences that surpass the economic threshold for damage, c.	8.1 As part of the program, the farm must collect and record the following information about pest infestations: infestation dates, duration, area and location; type of pest; the control mechanisms employed; environmental factors during the infestation; and damage caused and estimated costs of damage and control.	Standard gives list of prohibited agrochemicals in annex.

rather than mechanized harvesting - must eliminate fire for harvest preparation within a maximum period of three years and must implement a set of rules. Fire must not be allowed to spread to conservation areas. The workers in charge of burning must be adequately trained in fire management, control and suppression (ADD) **8.9** The use of fire for pest and disease management must only be used if it is the option of less environmental impact in comparison with other pest control measures. This option must be approved by competent authorities, must reflect technical considerations and focus on problematic areas only (ADD).	Measures must be taken to substitute World Health Organization Class Ia, Ib and II technical grade active ingredients of pesticides. **8.7** Records must be maintained of any post-harvest treatment. These records must at least include a list of required information (*Not listed here).* **8.8** Rules include: Explain fire-elimination plan to workers, suppliers and surrounding communities, Comply with local legislation about the use of fire for farm management, Conduct burning in a way that minimizes impact on workers, surrounding communities and natural resources.		
9.1 The farm must execute a soil erosion prevention and control program that minimizes the risk of erosion and reduces existing erosion. **9.2** The farm must have a soil or crop fertilization program based on soil characteristics and properties, periodic soil or foliage sampling and analysis, and advice from a competent and impartial professional or authority. The number of soil or foliage samples must correspond with the size of the production area, types of soil, and variations in its properties, as well as results of previous analyses. **9.3** The farm must use and expand its use of vegetative ground cover to reduce erosion and improve soil fertility; structure and organic material content, as well as minimize the use of herbicides. **9.4** The farm must promote the use of fallow areas with natural or planted vegetation in order to recover natural fertility and interrupt pest life cycles. The farm must have a plan that indicates the fallow techniques or practices and their timing. **9.5** New production areas must only be located on land with the climatic, soil and topographic conditions suitable for intensity level of the agricultural production planned. The establishment of new production areas must be based on land use capacity studies that demonstrate long-term production capacity. The cutting of natural forest cover or burning to prepare new production areas is not permitted (C).	**9.1** The program activities must be based on the identification of soils affected by or susceptible to erosion, as well as soil properties and characteristics, climatic conditions, topography and agricultural practices for the crop. Special emphasis must be placed on controlling runoff and wind erosion from newly tilled or planted areas, as well as preventing sedimentation of water bodies. The farm must use and expand vegetative ground covers on the banks and bottoms of drainage canals to reduce erosion and agrochemical drift and runoff towards water bodies. **9.2** The producer must keep the results of these analyses on the farm for a two-year period. Organic and non-organic fertilizers must be applied so as to avoid any potential negative impacts on the environment. The farm must give priority to organic fertilization using residues generated by the farm. **9.3** There must be a vegetative ground cover establishment and expansion plan that indicates the areas with existing cover, as well as areas where cover will be established in the future. The farm must include a timeframe for these activities. **9.4** These areas must be identified in the fields and on the farm map. Burning is not allowed to prepare land.		
10.1 The farm must have an integrated waste management program for the waste products it generates. **10.2** The use of open waste dumps and open-air burning of waste is not permitted. The burning of waste products is only allowed in an incinerator designed for that purpose, based on technical studies that determined the size, optimum location and control measures for minimizing the environmental and human health impacts related to its construction and operation. The farm must have the relevant legal permits for the construction and operation of this incinerator, as well as the appropriate operating procedures. **10.3** The final or semi-permanent waste deposit areas on the farm must be designed and managed to reduce the risks of environmental contamination and damage to human health. **10.4** Farms must not transfer waste to persons or businesses without checking that its treatment or final use complies with legal requirements and the requirements of this standard **10.5** The farm must be clean and free of accumulations of all types of waste products in order to maintain a positive image and contribute to the workers' well-being. **10.6** The farm must implement practices to diminish its emissions of GHG gases and increase CO2 sequestration. Such practices include soil cover management, use of clean technologies, improvement of energy efficiency, reduction in tillage etc aimed at GHG reduction and CO2 sequestration.	**10.1** This must be based on the concepts of refusing or reducing the use of products that have actual or potential negative impacts on the environment or human health as well as reusing and recycling waste. Sources and types of waste must be identified and the quantity must be estimated. Activities of the integrated waste management program must be in accordance with the types and quantities of waste generated. **10.3** Its location must be in accordance with applicable laws regarding distances from houses and other areas of human activity, water channels and sources, and conservation areas. The farm must have identified the sites and designs that are technically suitable for the final deposit or processing of both organic and inorganic waste through an evaluation of site characteristics, the volume and type of waste to be eliminated or treated, and potential impacts. **10.4** Waste products or materials that have been in contact with agrochemicals or any other toxic or harmful substances must not be given away without first verifying that they will be used for similar purposes that do not represent a danger to human health or produce negative environmental impacts. **10.5** The farm must regularly implement educational activities for farm workers and residents with objective of promoting cleanliness and preventing the indiscriminate disposal of waste. The farm must strategically place waste receptacles on the farm and regularly collect and dispose of their contents.		

Rainforest Alliance Certified (forestry)

General characteristics:	
Status:	In implementation
Geographical coverage:	Worldwide
Scope:	Smartlogging: This standard shall be applicable to individual loggers and logging firms, groups of loggers (e.g. logger associations), and forest products companies. Also: FSC/RA (in framework of Smartwood program)
Initiator system:	The Rainforest Alliance (RA) is an international environmental organization based in New York City.

Short summary system or initiative:	Extension system:	
RA has a SmartSource, a Smartwood and a TREES program to promote is a customized service provided by the Rainforest Alliance to companies and organizations that want to examine and improve their forest-product purchasing policies and practices [58].	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Y

Context:

SmartLogging candidate operations may also apply for the following complementary add-on certifications when they apply for SmartLogging certification [59]:
Controlled Wood (FSC)
Chain of Custody (FSC)
Verification of Legal Origin (VLO)/Verification of Legal Compliance (VLC)
Sustainable Forestry Initiative Objective 8
SmartLogging fully supports FSC certification.

Status of system:

TREES is a program of the Rainforest Alliance's forestry division, focusing on training, extension, enterprises and sourcing activities related to sustainable forest management certification.
SmartSource is a customized service provided by the Rainforest Alliance to companies and organizations that want to examine and improve their forest-product purchasing policies and practices.
The SmartWood program offers a diverse set of certification and verification services. SmartWood provides verification services as:

- Forest carbon validation and certification
- Legality and HCV Forest verification
- *SmartStep* helps companies identify and address gaps in their forest practices using a step-by-step approach that leads to FSC certification. Forestry enterprises that comply with the rigorous standards of the Forest Stewardship Council (FSC) can use the Rainforest Alliance Certified™ seal in conjunction with the FSC logo to differentiate their products in the marketplace.
- *SmartLogging* certification is a third party audit and certification system for loggers, enabling them to demonstrate to clients that logging will be done responsibly.

The Rainforest Alliance's SmartWood program has certified the first biomass pellet mill in the United States to Forest Stewardship Council (FSC) standards in June 2009 [60].

Planned activities:

Smartlogging program was in 2008 in second phase of a two phase public comment period. Comments are to be compiled and the standard will be revised where appropriate [59].

Structure system or initiative:	
Juridical basis:	Voluntary (label)
Participation in system:	For Smartlogging: The SmartLogging program is, with multi-stakeholder consultation, developing best practice logging standards and assessment procedures [59]. RA/FSC: See FSC
Local stakeholder involvement	RA/FSC: See FSC
Monitoring performance:	RA/FSC: See FSC
Chain of custody system	RA/FSC: See FSC

Level of detail CoC system:	For Smartlogging: SmartLogging is not an FSC-accredited program; it may be combined with FSC Controlled Wood requirement on a case by case basis. The Lead Auditor is chosen based on their experience and knowledge and auditing experience. The auditor must also be free of conflicts of interest with the certification candidate [59]. Audits to the standard shall verify on-site that harvesting operations meet the requirements. Evaluation of conformance with the standard is based upon data collection by the auditor(s) through review of the harvester's documentation, interviews with employees and stakeholders, and field observations and measurements. The Following initial certification, loggers will be audited on an annual basis to ensure that harvesting operations continue to conform to the standard [59]. RA/FSC: See FSC.

Further information on:	
Removal of trade barriers	
Costs:	

For RA/FSC principles and criteria: See FSC. RA/SmartWood has developed a Generic Certification Standard for SmartLogging certification that shall be used to assess timber harvesting practices. The intent of this standard is to acknowledge and certify that logging operations comply with a set of social, environmental and economic criteria. The principles are intended for harvesting operations only [59].

Principles Smartlogging [59]:	
1	Legal Requirements: Harvesters shall respect all applicable laws.
2	Harvest Planning and Monitoring: Harvester completes adequate planning prior to harvest to assure an understanding of landowner harvest objectives and site-specific environmental concerns. Harvester monitors progress of harvest to see that environmental and landowner harvest objectives are met, and does a post-harvest assessment to determine if follow-up actions are necessary.
3	Harvesting Practices: Harvesting practices, including equipment used, are chosen and employed based on specific site conditions and landowner harvest prescriptions for the stands and site. Protection of water quality is an increasingly important consideration in management of forest resources. Harvesters can have a significant impact in protecting water quality and soils.
4	Community values: Efforts are made to conduct harvesting operations in such a way that respects local community values so that loggers maintain a "social license to operate".
5	Occupational Health and Safety: Recognizing that logging is a dangerous occupation, protecting the health and safety of workers is of utmost importance. Loggers should maintain constant vigilance to recognize and minimize occupational health and safety risks.
6	Business Viability: Logging is a difficult business and equipment is costly. Loggers must be able to understand the true costs of doing business to have an economically sustainable business. A logger should demonstrate awareness of the need for sustainable business practices.
7	Continuous Improvement and Innovation: Harvester demonstrates efforts to improve logging operations, uses best available technologies, and shows innovation in the procedures used. Observation of harvest sites, attendance of harvesters at training courses, and observations by landowners and others familiar with the harvester's work demonstrate efforts at improvement.
8	Silviculture and Reforestation: This subject area applies only to harvesters who have complete control over the silviculture, reforestation and harvest volume removal on the forestland property from which they are purchasing timber.

Criteria:	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
1.1 Harvester has a legal right to harvest the forest areas under consideration.	• 1.1.1: Harvester has documents that demonstrate that legal permits from the applicable government agency, where needed, are in place to harvest. These may be obtained by a dealer, landowner, and landowner's agent, whichever is appropriate. • 1.1.2: A timber sale contract is signed by the landowner, or the landowner's agent and wood purchaser. Timber sale boundaries and landowner's commitment/permission are defined in the timber sale contract.		
1.2 Harvester obeys legal/regulatory requirements, and obtains necessary permits in accordance with laws.	• 1.2.1: Legal requirements are met, including, but not limited to those related to: • Environmental quality (BMP manual, harvesting regulations); • Water or water quality (BMP manual, Water Quality Regulations); • Rare, threatened or endangered species (Endangered Species Act, CITES); • NTF products: hunting, fishing and other NTFPs meet applicable regulations. • 1.2.2 Worker and harvester occupational health and safety and labor laws are met including government and ILO labor laws, and workers compensation laws. • 1.2.3 Where applicable, harvester is a legally licensed professional, with required permits and license kept current. • 1.2.4 Logging equipment used by the harvester meets government safety requirements. • 1.2.5 Trucks meet government regulations. • 1.2.6 Harvester has insurance in accordance with local legal requirements, which may include: General liability; Worker's comp; and Automotive liability. • 1.2.7 Containment and disposal of hazardous materials (e.g., pesticides, petroleum, lubricants and chemicals) is in accordance with jurisdiction laws and regulations.		
1.3 Any legal outcomes from dispute resolution processes are respected.			
2.1 A written harvest plan or service/logging contract is in place prior to harvest, based on site-specific conditions, and in agreement with the landowner's land use and harvest objectives.	• 2.1.1: If the landowner has a forest management plan and/or management and harvesting objectives, as described in or related to the written harvest plan, they are discussed with the landowner prior to harvest. • 2.1.2: Any major changes to the harvest plan or service/logging contract are approved prior to implementation by the landowner or the landowner's agent.		
2.2 Harvest plan and/or logging contract has been approved by landowner, landowner's agent or authorized state or other jurisdictional institution where applicable.	• 2.2.1: Harvest plan or service/logging contract includes e.g. Landowner's harvest prescriptions; Silviculture; Protection of wildlife habitat, rare plant communities, stream zones, historical or personal sites and other critical environmental or cultural features; • Harvesting close-out measures (e.g., water bars, stream crossing rehabilitation, soil preparation and regeneration, etc.); • Harvest maps, or aerial photos, identify: Property boundaries; Harvest area; Streamside management zones and other riparian zones; Unique historic, religious or cultural sites; Rare, threatened or endangered species habitat; and other unique biological or geological features.		
2.3 A documented on-site pre-harvest inspection is conducted within one year of harvest.	• 2.3.1: The pre-harvest inspections are done by the harvester, preferably with the landowner or land manager. • 2.3.2: Pre-harvest inspections review property boundaries, harvest area boundaries, streamside management zones (SMZ) and harvesting restrictions in SMZs, special considerations for protection of special sites, and harvest "close out" procedures. • 2.3.3: Property boundaries and limits of harvest area are clearly marked on the ground. • 2.3.4: Harvesting infrastructure is reviewed and necessary improvements are included in the sale/service agreement.		
2.4: A documented post-harvest assessment of harvest site is conducted at completion of harvest	• 2.4.1: A post-harvest evaluation is completed by the harvester, preferably with the landowner or land manager, and follow-up actions are identified and conducted as necessary. Post-harvest inspection by jurisdiction agency is required where the service is available. • 2.4.2: Post-harvest inspections review condition of streamside management zones, harvest infrastructure, sites identified for special protection, residual stand, "closeout" features, such as water		

	bars, and other features identified in pre-harvest inspection.		
3.1 Harvesting practices meet or exceed applicable jurisdictional best management practices (BMPs), even if BMPs are voluntary.	• 3.1.1: Applicable state harvesting BMPs are being implemented. • 3.1.2: Logger, supervisor, or person responsible for implementing BMPs is required to have BMP training and training on the SL Standard. • 3.1.3: BMP manuals are accessible to employees, contactors and employees.		State harvesting BMPs
3.2 Harvesting practices are conducted when risk of impacts are low.	• 3.2.1: Harvesting, especially of identified sensitive areas, is conducted when risk is low • 3.2.2: Harvesting systems are appropriate for the site. • 3.2.3: Appropriate equipment (e.g., low impact tires, mats) is used in wet (swamp) areas.		
3.3: Harvest prescriptions are followed and damage to residual vegetation is minimized.	• 3.3.1: Silvicultural prescriptions are followed. • 3.3.2: Damage to residual trees and other resources are minimized by the harvest and extraction process: Scarring on boles of residual trees is minimized; Damage to residual tree leaders and limbs is minimized; coarse woody debris is left on site; and Damage to understory vegetation is minimized. • 3.3.3: Harvest closeout activities are undertaken and occur as per the harvest plan.		
3.4 Streams, lakes and wetlands are protected during harvest operations.	• 3.4.1: Riparian buffer zones and streamside management zones (SMZ) are protected as outlined in BMPs or this standard. • 3.4.2: Equipment use in SMZs and wetlands is minimized. • 3.4.3: Additional buffer zone management practices outlined by the landowner are respected.		
3.5 Road and landing construction is implemented in a manner that minimizes soil erosion and does not impede water flow.	• 3.5.1: The number of, and forest area affected by, roads, landings and concentration yards is based on site conditions. The total area affected by the harvesting network should be kept to a minimum. • 3.5.2: Roads and landings are constructed outside of SMZs unless the reuse of a preexisting facility is the less damaging alternative. • 3.5.3: Layout of roads, skid trails and landings consider soil, slope stability, gradient, and weather conditions. • 3.5.4: Erosion control structures such as waterbars and rolling dips are properly constructed to effectively divert water from roads and skid trails. • 3.5.5: Erosion control structures (e.g., waterbars, rolling dips) are constructed prior to stream crossings to divert direct water flow into buffers or filter strips. • 3.5.6: Road surfaces are designed to drain water effectively: Rock and gravel is used on roads if feasible; and roads are out sloped, in sloped or crowned as appropriate. • 3.5.7: Permanent culverts are adequately sized and properly situated: Placed to effectively manage water flow; installed so that subsequent road maintenance does not result in damage to culverts; and sized adequately for periods of high volume water flow. • 3.5.8: Disturbed soil is stabilized to prevent soil erosion or sediment flow • 3.5.9: Non-invasive species are used for soil stabilization and re-vegetation of disturbed sites.		
3.6 Skid trails are designed and managed in a manner that protects and conserves soil and water resources.	• 3.6.1: Skid trails should be located and flagged before harvesting commences. • 3.6.2: A reasonable effort is made to minimize disruption of soil organic layers during harvest • 3.6.3: Skid trails are stabilized during and following harvesting activities • 3.6.4: Skid trails avoid sensitive sites, such as wet areas and unstable soils.		
3.7 Stream crossings are managed to minimize negative environmental impacts during road building and harvest.	• 3.7.1: The number of road or skid trail stream crossings for all categories of streams is minimized. • 3.7.2: Log landings are placed on either side of the stream where practical to reduce multiple crossing of intermittent streams. • 3.7.3: Portable bridges, mats, or logs are used to cross streams when necessary. • 3.7.4: Stream crossings are placed at right angles to the stream where appropriate. • 3.7.5: Culverts are installed properly in a manner not to inhibit migration of aquatic organisms. • 3.7.6: Integrity of stream channel and stream banks is maintained during installation and removal of stream crossing devices.		
3.8: Chemicals and petroleum products are contained as to not cause environmental damage.	• 3.8.1: Spills are dealt with according to state regulations and BMPs. • 3.8.2: Spill kits are available at the worksite and operators are familiar with their use. • 3.8.3: Chemical and petroleum product waste from equipment maintenance procedures are captured		

	and not allowed to flow on the ground or in watercourses. • 3.8.4: Equipment is properly maintained to avoid hydraulic fluid, motor oil and gear oil leaks.		
3.9: Important habitats to wildlife, rare, threatened or endangered species, and other special or unique natural sites are conserved. If available, natural heritage programs are consulted to determine if RTE species and rare natural communities are present.	• 3.9.1: Specific wildlife habitat is protected as marked or designated in the harvest plan. • 3.9.2: Harvesting avoids time periods and sites that are known to be important to species that are sensitive to human activity (e.g., nesting and breeding sites, etc.). • 3.9.3: Wildlife trees, snags, and other special situations are retained in a creative and safe manner in compliance with hazardous tree regulations or procedures. • 3.9.4: Areas designated for strict conservation by the landowner (i.e. no harvesting or other activities) are protected. • 3.9.5: Rare, threatened or endangered species, or their habitats, that are discovered during harvest operations are protected and reported to the landowner. • 3.9.6: Unique features are protected during the harvest.		
4.1 Harvest planning and operations consider potential impacts to local community.	• 4.1.1: Cultural features of historic and/or archaeological value are protected in the field as identified in the harvest prescription. • 4.1.2: Aesthetic prescriptions as defined in the harvest prescriptions are implemented during harvest and close-out operations. • 4.1.3: Chemical containers, solid non-organic wastes and other refuse produced during harvesting are disposed of in an environmentally sound manner at off-site locations. • 4.1.4: Harvester actively works to resolve conflicts with neighbors when they arise.		
5.1: Harvester has an occupational health and safety plan.	• 5.1.1: A written safety & health plan that includes e.g. an emergency response plan; requirements for personal safety equipment; etc. • 5.1.2: Harvester participates in insurance or government compensation programs.		
5.2: Harvester ensures compliance with safety plan and related requirements in terms of protective equipment, machine/tool operation, maintenance of harvesting and felling equipment, and handling of dangerous materials.	• 5.2.1: Harvesters, employees or sub-contractors have received occupational safety and health orientation/training. • 5.2.2: Harvesters, employees and sub-contractors demonstrate safe harvesting techniques in the field, such as e.g. maintaining good communication with other workers; • 5.2.3: Harvester evaluates and documents employee and sub-contractor safety performance. • 5.2.4: Harvester's written safety plan is accessible to sub-contractors and employees. • 5.2.5: CPR, first aid training and transport of injured workers, is provided by the harvester. • 5.2.6: Where available, communications equipment for emergencies is on-site.		
6.1: Harvester demonstrates business viability.	• 6.1.1: Harvester has a written business plan. • 6.1.2: Harvester consults business support professionals as necessary, such as accountants and insurance professionals. • 6.1.3: Harvester maintains records of harvesting activities, including e.g. contracts with landowners, mills, dealers and subcontractors; and, load reports, and scale records and summaries, calculating daily cost per production unit (e.g., ton, board foot). • 6.1.4 Equipment is well maintained: no oil or hydraulic leaks; ROPS of machinery is in good condition; regular maintenance is performed and documented.		
6.2 Harvester provides working conditions (e.g. wages, benefits and opportunities) that enhance workforce stability.	6.2.1: Harvester provides equal opportunities for employment and advancement. 6.2.2: Employee job training is provided.		
6.3 Harvester maximizes utilization of harvested products.	• 6.3.1: Grading and sorting of harvested products is conducted to add or maintain commercial value where appropriate. • 6.3.2: Harvested products are transported from harvest site to markets on a timely basis to minimize product degrade and loss. • 6.3.3: All merchantable materials as prescribed in the harvest contract are shipped.		
6.4: Harvester maintains ethical business practices.	• 6.4.1: Contracts are honored. • 6.4.2: Fair market value is provided for services rendered. • 6.4.3: Fair market value is provided for timber purchased. • 6.4.4: Required taxes, royalties and fees are paid.		

7.1: Harvester continually learns from experience and training to improve practices.	• 7.1.1: Harvester analyzes challenging harvesting situations and data from post-harvest assessments and pre-plans innovative solutions, such as renting or acquiring equipment appropriate for operation; • 7.1.2: Harvesting skills and business skills are maintained or enhanced through periodic training (e.g., continuing education courses, equipment operator training and environmental education).		
8.1: Silviculture, forest management and reforestation BMPs are followed.			
8.2: Silviculture and/or reforestation are part of the harvest plan.	• 8.2.1 Silvicultural prescriptions that identify and address long-term forest management goals, such as rotation age, length of cutting cycle, target tree diameter, and desired species are described in the harvest plan. • 8.1.2: Reforestation method, including site preparation and desired species, is described in the harvest plan.		
8.3: Uneven-aged silviculture or partial cuts shall not result in high grading a forest stand.	• 8.3.1: Uneven-aged silviculture shall leave high quality examples of trees in all existing age classes. • 8.3.2: High quality examples of desired tree species should be retained as seed sources		
8.4: Clearcuts shall be planted or should show signs of natural regeneration, such as new growth of desired species, unless clearcut is associated with legal land use conversion to agriculture or development.	• 8.4.1: Areas that are clearcut have a written reforestation plan in accordance with 8.2 unless clearcut is associated with legal land use conversion to agriculture or development.		

CCBS: Community and Biodiversity Standards

General characteristics:	
Status:	In implementation
Geographical coverage:	Worldwide
Scope:	CCBS focuses on land-based climate change mitigation projects, and accepts the following project types: • primary or secondary forest conservation; • reforestation or re-vegetation; • agro-forestry plantations; • densification and enrichment planting; • introduction of new cultivation practices; • introduction of new timber harvesting and/or processing practices (e.g., reduced impact logging); • reduced tillage on cropland; • improved livestock management; etc [61].
Initiator system:	The CCBS was developed by the Climate, Community and Biodiversity Alliance with feedback and suggestions from independent experts. CCBA is a partnership of non-governmental organizations, corporations and research institutes. The first edition was released in May 2005 [61].

Short summary system or initiative:	Extension system:	
The Climate, Community and Biodiversity Standard (CCBS) is a project design standard and offers rules and guidance for project design and development [61]. CCBS defines rules for LULUCF / biosequestration projects that specifically focus on maximizing biodiversity and social benefits [61].	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Y
Context:		
The CCB standards go beyond the current Kyoto Protocol CDM requirements by ensuring that there is a net community benefit to a planned project [62].		
Status of system:		
In implementation		
Planned activities:		
-		

Structure system or initiative:	
Juridical basis:	Voluntary basis
Participation in system:	CCB Alliance is formed by representatives from each member organization. It currently has 13 members (research, companies, NGOs) and makes decisions about changes to the standards [61]. The second edition [63] has been developed by a Standards Committee. The procedure is described in a Tor indicating a required balance of interest [64].
Local stakeholder involvement	Stakeholder involvement is required and must be documented during all phases of project development. Stakeholders must have an opportunity before the project design is finalized, to raise concerns about potential negative impacts, express desired outcomes and provide input on the project design [61].
Monitoring performance:	Every 5 years
Chain of custody system	Not applicable
Level of detail (CoC) system:	The CCB Alliance works closely with auditors, but it is ultimately the auditor who makes the decision to approve or reject a project. *Requirements for verification:* Once a project has been designed, a third-party independent auditor validates the project. After reviewing relevant project documents, a site visit, and taking account of the comments received during a 21-day public comment period, the auditor approves or rejects the project [61]. *Verification approval process*: Each project must be verified at least every five years. Because CCBS is only a project design standard, it does not verify quantified emissions reductions. Verification includes a project document review by the auditor and a site visit to check on project implementation (including interviews with relevant stakeholders) and monitoring results in addition to any

	changes in project design [61, 62]. *Third party verification:* Validation and verification can be done by the same auditor. The accreditation of auditors lies with the CCB Alliance currently limited to DOE's (Designated Operational Entity) accredited by CDM EB for Afforestation and Reforestation auditors accredited by the Forestry Stewardship Council [61].

Further information on:	
Removal of trade barriers	
Costs:	Cost for validation of a project rages from €3,500 to €10,000. If the validation is being done in conjunction with CDM, validation costs are lower for CCBS than for stand alone projects, because many of the requirements for CCBS will already have been fulfilled through the CDM requirements (e.g. baseline calculations) [61].

Principles [63]:	
General Section (required)	
G1	Original conditions in the project area
G2	Baseline projections
G3	Project design and goals
G4	Management capacity and best practices
G5	Legal status and property rights
Climate Section (required)	
CL1	Net positive climate impacts
CL2	Offsite climate impacts (leakage)
CL3	Climate impact monitoring
Community section (required)	
CM1	Net positive community impacts
CM2	Offsite stakeholder impacts
CM3	Community impact monitoring
Biodiversity section (required)	
B1	Net biodiversity impacts
B2	Offsite biodiversity impacts
B3	Biodiversity impact monitoring
Optional ("Gold Level" section)	
GL1	Climate change adaptation benefits
GL2	Exceptional community benefits
GL3	Exceptional biodiversity benefits

Criteria [63]:	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
G1. The original conditions at the project area and the surrounding project zone before the project commences must be described. This description, along with baseline projections (G2), will help to determine the likely impacts of the project. The project proponents must provide a description of the project zone, containing all the following information: • General Information • Climate information • Community information • Biodiversity information	General information: The location of the project and basic physical parameters The types and condition of vegetation within the project area. The boundaries of the project area and the project zone. Climate Information: Current carbon stocks within the project area(s) Community information: * A description of communities located in the project zone, including basic socio-economic and cultural information that describes the social, economic and cultural diversity within communities identifies specific groups such as Indigenous Peoples and describes any community characteristics. * A description of current land use and customary and legal property rights including community property in the project zone, identifying any ongoing or unresolved conflicts or disputes and identifying and describing any disputes over land tenure that were resolved during the last ten years. Biodiversity Information: * A description of current biodiversity within the project zone (diversity of species and ecosystems) and threats to that biodiversity, using appropriate methodologies, substantiated where possible with appropriate reference material. * An evaluation of whether the project zone includes any of the following High Conservation Values (HCVs) and a description of the qualifying attribute (listed).	Carbon stocks calculated using stratification by land-use or vegetation type and methods of carbon calculation (such as biomass plots, formulae, default values) from the IPCC 2006 Guidelines for National GHG Inventories for Agriculture, Forestry and Other Land Use or a more robust and detailed methodology.	References and recommendations tools are provided: see annex
G2. The project proponents must develop a defensible and well-documented 'without-project' reference scenario that must: • Describe the most likely land-use scenario in the absence of the project • Document that project benefits would not have occurred in the absence of the project • Calculate the estimated carbon stock changes associated with the 'without project' reference scenario described above. • Describe how the 'without project' reference scenario would affect communities in the project zone, including the impact of likely changes in water, soil and other locally important ecosystem services. • Describe how the 'without project' reference scenario would affect biodiversity in the project zone (e.g., habitat availability, landscape connectivity and threatened species).	Land-use scenario: Describing the range of potential land use scenarios and the associated drivers of GHG emissions and justifying why the land-use scenario selected is most likely. Project benefits: Explaining how existing laws or regulations would likely affect land use and justifying that the benefits being claimed by the project are truly 'additional' and would be unlikely to occur without the project Carbon stock changes: Projects whose activities are designed to avoid GHG emissions must include an analysis of the relevant drivers and rates of deforestation and/or degradation and a description and justification of the approaches, assumptions and data used to perform this analysis.	Land-use scenario: following IPCC 2006 GL for AFOLU or a more robust and detailed methodology Carbon stock changes: This requires estimation of carbon stocks for each of the land-use classes of concern and a definition of the carbon pools included, among the classes defined in the IPCC 2006 GL for AFOLU. The timeframe for this analysis can be either the project lifetime (see G3) or the project GHG accounting period, whichever is more appropriate. Estimate the net change in the emissions of non-CO2 GHG emissions such as CH4 and N2O in the 'without project' scenario. Non-CO2 gases must be included if they are likely to account for more than 5% of the project's overall GHG impact over each monitoring period. Regional-level estimates can be used at the project's planning stage as long as there is a commitment to evaluate locally-specific carbon stocks and to develop a project-specific spatial analysis of deforestation and/or degradation using an appropriately robust and detailed carbon accounting methodology before start of project.	References and recommendations tools are provided: see annex standard
G3. The project proponents must contain a number of components:	Note on I:		

a) Provide a summary of the project's major climate, community and biodiversity objectives. b) Describe each project activity with expected climate, community and biodiversity impacts and its relevance to achieving the project's objectives. c) Provide a map identifying the project location and boundaries of the project area(s), where the project activities will occur, of the project zone and of additional surrounding locations that are predicted to be impacted by project activities (e.g. through leakage). d) Define the project lifetime and GHG accounting period and explain and justify any differences between them. e) Define an implementation schedule, indicating key dates and milestones in the project's development. f) Identify likely natural and human-induced risks to the expected climate, community and biodiversity benefits during the project lifetime and outline measures adopted to mitigate these risks. g) Demonstrate that the project design includes specific measures to ensure the maintenance or enhancement of the high conservation value attributes identified in G1 consistent with the precautionary principle. h) Describe the measures that will be taken to maintain and enhance the climate, community and biodiversity benefits beyond the project lifetime. i) Document and defend how communities and other stakeholders potentially affected by the project activities have been identified and have been involved in project design through effective consultation j) Formalize a clear process for handling unresolved conflicts and grievances that arise during project planning and implementation. k) Describe what specific steps have been taken, and communications methods used, to publicize the CCBA public comment period to communities and other stakeholders and to facilitate their submission of comments to CCBA. l) Demonstrate that financial mechanisms adopted, including projected revenues from emissions reductions and other sources, are likely to provide an adequate flow of funds for project implementation and to achieve the anticipated climate, community and biodiversity benefits.	Particularly with a view to optimizing community and stakeholder benefits, respecting local customs and values and maintaining high conservation values. Project developers must document stakeholder dialogues and indicate if and how the project proposal was revised based on such input. A plan must be developed to continue communication and consultation between project managers and all community groups about the project and its impacts to facilitate adaptive management throughout the life of the project. Note on J: Project proponents must play an active role in distributing key project documents to affected communities and stakeholders and hold widely publicized information meetings in relevant local or regional languages. Note on K: The project design must include a process for hearing, responding to and resolving community and other stakeholder grievances within a reasonable time period. This grievance process must be publicized to communities and other stakeholders and must be managed by a third party or mediator to prevent any conflict of interest. Project management must attempt to resolve all reasonable grievances raised, and provide a written response to grievances within 30 days. Grievances and project responses must be documented.		
G4. The project proponents must: a) Identify a single project proponent which is responsible for the project's design and implementation. b) Document key technical skills that will be required to implement the project successfully. c) Include a plan to provide orientation and training for the project's employees and relevant people from the communities with an objective of building locally useful skills and knowledge to increase local participation in project implementation. d) Show that people from the communities will be given an equal opportunity to fill all employment positions (including	Note on a): If multiple organizations or individuals are involved in the project's development and implementation the governance structure, roles and responsibilities of each of the organizations or individuals involved must also be described. Note on B: including community engagement, biodiversity assessment and carbon measurement and monitoring skills. Document the management team's expertise and prior experience implementing land management projects at the scale of this project. If relevant experience is lacking, the proponents must either demonstrate how other organizations will be partnered with to support the project or have a recruitment strategy to fill the gaps. Note on C: These capacity building efforts should target a wide range of		References and recommendations tools are provided: see annex standard

management) if the job requirements are met. e) Submit a list of all relevant laws and regulations covering worker's rights in the host country. Describe how the project will inform workers about their rights. Provide assurance that the project meets or exceeds all applicable laws and/or regulations covering worker rights and, where relevant, demonstrate how compliance is achieved. f) Comprehensively assess situations and occupations that pose a substantial risk to worker safety. A plan must be in place to inform workers of risks and to explain how to minimize such risks. g) Document the financial health of the implementing organization(s) to demonstrate that financial resources budgeted will be adequate to implement the project.	people in the communities, including minority and underrepresented groups. Identify how training will be passed on to new workers when there is staff turnover, so that local capacity will not be lost. Note on D: Project proponents must explain how employees will be selected for positions and where relevant, must indicate how local community members, including women and other potentially underrepresented groups, will be given a fair chance to fill positions for which they can be trained. Note on F: Where worker safety cannot be guaranteed, project proponents must show how the risks will be minimized using best work practices.		
G5. Based on information about current property rights provided in G1, the project proponents must: a) Submit a list of all relevant national and local laws and regulations in the host country and all applicable international treaties and agreements. Provide assurance that the project will comply with these and, where relevant, demonstrate how compliance is achieved. b) Document that the project has approval from the appropriate authorities, including the established formal and/or traditional authorities customarily required by the communities. c) Demonstrate with documented consultations and agreements that the project will not encroach uninvited on private property, community property, or government property and has obtained the free, prior, and informed consent of those whose rights will be affected by the project. d) Demonstrate that the project does not require the involuntary relocation of people or of the activities important for the livelihoods and culture of the communities. e) Identify any illegal activities that could affect the project's climate, community or biodiversity impacts taking place in the project zone and describe how the project will help to reduce these activities so that project benefits are not derived from illegal activities. f) Demonstrate that the project proponents have clear, uncontested title to the carbon rights, or provide legal documentation demonstrating that the project is undertaken on behalf of the carbon owners with full consent.	Note on D: If any relocation of habitation or activities is undertaken within the terms of an agreement, the project proponents must demonstrate that the agreement was made with the free, prior, and informed consent of those concerned and includes provisions for just and fair compensation. Note on F: Where local or national conditions preclude clear title to the carbon rights at the time of validation against the Standards, the project proponents must provide evidence that their ownership of carbon rights is likely to be established before they enter into any transactions concerning the project's carbon assets.		References and recommendations tools are provided: see annex standard
CL1. The project proponents must: a) Estimate the net change in carbon stocks due to the project activities. b) Estimate the net change in the emissions of non-CO2 GHG emissions such as CH4 and N2O in the with and without project scenarios if those gases are likely to account for more than a 5% increase or decrease (in terms of CO2-equivalent) of the project's overall GHG emissions reductions or removals over each monitoring period. c) Estimate any other GHG emissions resulting from project activities. d) Demonstrate that the net climate impact of the project is	f) Note on A: The net change is equal to carbon stock changes with the project minus carbon stock changes without the project (the latter having been estimated in G2). This estimate must be based on clearly defined and defendable assumptions about how project activities will alter GHG emissions or carbon stocks over the duration of the project or the project GHG accounting period. Note on C: Emissions sources include, but are not limited to, emissions from biomass burning during site preparation, emissions from fossil fuel combustion, direct emissions from the use of synthetic fertilizers, and emissions from the decomposition of N-fixing species. Note on D: The net climate impact of the project is the net change in carbon stocks plus net change in non-CO2 GHGs where appropriate	Note on A: Using the methods of calculation, formulae and default values of the IPCC 2006 GL for AFOLU or using a more robust and detailed methodology. Note on C: The following CDM Executive Board tool can be used to quantify these emissions: http://cdm.unfccc.int/EB/033/eb33_repan14.pdf http://cdm.unfccc.int/EB/033/eb33_repan16.pdf	References and recommendations tools are provided: see annex standard

positive. e) Specify how double counting of GHG emissions reductions or removals will be avoided, particularly for offsets sold on the voluntary market and generated in a country with an emissions cap.	minus any other GHG emissions resulting from project activities minus any likely project-related unmitigated negative offsite climate impacts (see CL2.3).		
CL2. The project proponents must: a) Determine the types of leakage that are expected and estimate potential offsite increases in GHGs (increases in emissions or decreases in sequestration) due to project activities. Where relevant, define and justify where leakage is most likely to take place. b) Document how any leakage will be mitigated and estimate the extent to which such impacts will be reduced by these mitigation activities. c) Subtract any likely project-related unmitigated negative offsite climate impacts from the climate benefits being claimed by the project and demonstrate that this has been included in the evaluation of net climate impact of the project (as calculated in CL1.4). d) Non-CO2 gases must be included if they are likely to account for more than a 5% increase or decrease (in terms of CO2-equivalent) of the net change calculations (above) of the project's overall off-site GHG emissions reductions or removals over each monitoring period.			
CL3 The project proponents must: a) Develop an initial plan for selecting carbon pools and non-CO2 GHGs to be monitored, and determine the frequency of monitoring. A plan must be in place to continue leakage monitoring for at least five years after all activity displacement or other leakage causing activity has taken place. Direct field measurements using scientifically robust sampling must be used to measure more significant elements of the project's carbon stocks. Other data must be suitable to the project site and specific forest type. b) Commit to developing a full monitoring plan within six months of the project start date or within twelve months of validation against the Standards and to disseminate this plan and the results of monitoring, ensuring that they are made publicly available on the internet and are communicated to communities and other stakeholders.	Note on A: Potential pools include aboveground biomass, litter, dead wood, belowground biomass, wood products, soil carbon and peat. Pools to monitor must include any pools expected to decrease as a result of project activities, including those in the region outside the project boundaries resulting from all types of leakage identified in CL2. Individual GHG sources may be considered 'insignificant' and do not have to be accounted for if together such omitted decreases in carbon pools and increases in GHG emissions amount to less than 5% of the total CO2-equivalent benefits generated by the project.Non-CO2 gases must be included if they are likely to account for more than 5% (in terms of CO2-equivalent) of the project's overall GHG impact over each monitoring period.		References and recommendations tools are provided: see annex standard
CM1. The project proponents must: a) Use appropriate methodologies to estimate the impacts on communities, including all constituent socio-economic or cultural groups such as indigenous peoples (defined in G1), resulting from planned project activities. b) Demonstrate that no High Conservation Values identified in G1.8.4-642 will be negatively affected by the project.	Note on A: A credible estimate of impacts must include changes in community well-being due to project activities and an evaluation of the impacts by the affected groups. Note on B: These are: G1.8.4 Areas that provide critical ecosystem services (e.g., hydrological services, erosion control, fire control); G1.8.5 Areas that are fundamental for the livelihoods of local communities (e.g., for essential food, fuel, fodder, medicines, or building materials without readily available alternatives); and, G1.8.6 Areas that are critical for the traditional cultural identity of communities (e.g., areas of cultural, ecological, economic or religious significance identified in collaboration with the communities).	Note on A: The estimate must be based on clearly defined and defendable assumptions about how project activities will alter social and economic well-being, including potential impacts of changes in natural resources and ecosystem services identified as important by the communities (incl. water and soil resources), over the duration of the project. The 'with project' scenario must then be compared with the 'without project' scenario of social and economic well-being in the absence of the project (completed in G2). The difference (i.e., the community benefit) must be positive for all	References and recommendations tools are provided: see annex standard

		community groups.	
CM2. The project proponents must: a) Identify any potential negative offsite stakeholder impacts that the project activities are likely to cause. b) Describe how the project plans to mitigate these negative offsite social and economic impacts. c) Demonstrate that the project is not likely to result in net negative impacts on the well-being of other stakeholder groups.			References and recommendations tools are provided: see annex standard
CM3. The project proponents must: a) Develop an initial plan for selecting community variables to be monitored and the frequency of monitoring and reporting to ensure that monitoring variables are directly linked to the project's community development objectives and to anticipated impacts. b) Develop an initial plan for how they will assess the effectiveness of measures used to maintain or enhance HCV related to community well-being present in the project zone. c) Commit to developing a full monitoring plan within six months of the project start date or within twelve months of validation against the Standards and to disseminate this plan and the results of monitoring, ensuring that they are made publicly available on the internet and are communicated to the communities and other stakeholders.			
B1. The project proponents must: a) Use appropriate methodologies to estimate changes in biodiversity as a result of the project in the project zone and in the project lifetime. The difference (i.e., the net biodiversity benefit) must be positive. b) Demonstrate that no High Conservation Values identified in G1.8.1-348 will be negatively affected by the project. c) Identify all species to be used by the project and show that no known invasive species will be introduced into any area affected by the project and that the population of any invasive species will not increase as a result of the project. d) Describe possible adverse effects of non-native species used by the project on the region's environment, including impacts on native species and disease introduction or facilitation. Project proponents must justify any use of non-native species over native species. e) Guarantee that no GMOs will be used to generate GHG emissions reductions or removals.	Note on B: G1.8.1 Globally, regionally or nationally significant concentrations of biodiversity values, including protected areas, threatened species, endemic species and areas that support significant concentrations of a species during any time in their lifecycle(e.g., migrations, feeding grounds, breeding areas); G1.8.2 Globally, regionally or nationally significant large landscape-level areas where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance; G1.8.3 Threatened or rare ecosystems.	Note on A: This estimate must be based on clearly defined and defendable assumptions. The 'with project' scenario should then be compared with the baseline 'without project' biodiversity scenario completed in G2.	References and recommendations tools are provided: see annex
B2. The project proponents must: a) Identify potential negative offsite biodiversity impacts that the project is likely to cause. b) Document how the project plans to mitigate these negative offsite biodiversity impacts. c) Evaluate likely unmitigated negative offsite biodiversity impacts against the biodiversity benefits of the project within the project boundaries. Justify and demonstrate that the net effect of the project on biodiversity is positive.			References and recommendations tools are provided: see annex standard
B3. The project proponents must:			

a) Develop an initial plan for selecting biodiversity variables to be monitored and the frequency of monitoring and reporting to ensure that monitoring variables are directly linked to the project's biodiversity objectives and to anticipated impacts (positive and negative). b) Develop an initial plan for assessing the effectiveness of measures used to maintain or enhance HCV related to globally, regionally or nationally significant biodiversity (G1.8.1-3) present in the project zone. c) Commit to developing a full monitoring plan within six months of the project start date or within twelve months of validation against the Standards and to disseminate this plan and the results of monitoring, ensuring that they are made publicly available on the internet and are communicated to the communities and other stakeholders.			
GL1. The project proponents must: a) Identify likely regional climate change and climate variability scenarios and impacts. b) Identify any risks to the project's climate, community and biodiversity benefits resulting from likely climate change and climate variability impacts and explain how these risks will be mitigated. c) Demonstrate that current or anticipated climate changes are having or are likely to have an impact on the well-being of communities and/or the conservation status of biodiversity in the project zone and surrounding regions. d) Demonstrate that the project activities will assist communities and/or biodiversity to adapt to the probable impacts of climate change.		Note on A: using available studies, and identifying potential changes in the local land-use scenario due to these climate change scenarios in the absence of the project.	References and recommendations tools are provided: see annex standard
GL2. Project proponents must: a) Demonstrate that the project zone is in a low human development country OR in an administrative area of a medium or high human development country in which at least 50% of the population of that area is below the national poverty line. b) Demonstrate that at least 50% of households within the lowest category of well-being of the community are likely to benefit substantially from the project. c) Demonstrate that any barriers or risks that might prevent benefits going to poorer households have been identified and addressed in order to increase the probable flow of benefits to poorer households. d) Demonstrate that measures have been taken to identify any poorer and more vulnerable households and individuals whose well-being or poverty may be negatively affected by the project, and that the project design includes measures to avoid any such impacts. Where negative impacts are unavoidable, demonstrate that they will be effectively mitigated. e) Demonstrate that community impact monitoring will be able to identify positive and negative impacts on poorer and more vulnerable groups.		Note on E: The social impact monitoring must take a differentiated approach that can identify positive and negative impacts on poorer households and individuals and other disadvantaged groups, including women.	References and recommendations tools are provided: see annex standard
GL3. Project proponents must demonstrate that the project zone	Note on A: Regular occurrence of a globally threatened species		References and

includes a site of high biodiversity conservation priority by meeting either the vulnerability or ir-replaceability criteria defined below: a) Vulnerability Or, B). Irreplaceability	(according to the IUCN Red List) at the site: 1.1. Critically Endangered (CR) and Endangered (EN) species - presence of at least a single individual; or 1.2. Vulnerable species (VU) - presence of at least 30 individuals or 10 pairs. Note on B: A minimum proportion of a species' global population present at the site at any stage of the species' lifecycle according to the following thresholds: 2.1. Restricted-range species - species with a global range less than 50,000 km2 and 5% of global population at the site; or 2.2. Species with large but clumped distributions - 5% of the global population at the site; or 2.3. Globally significant congregations - 1% of the global population seasonally at the site; or 2.4. Globally significant source populations - 1% of the global population at the site;		recommendations tools are provided: see annex standard

FSC: Forest Stewardship Council (forest)

General characteristics:	
Status:	In implementation
Geographical coverage:	Worldwide
Scope:	Forestry including clearance: Sustainable forestry, wood and fiber products. There are 3 certificates: CoC, forest management and controlled wood.
Initiator system:	FSC founding assembly in 1993 in Toronto. FSC is an international NGO

Short summary system or initiative:	Extension system:	
The Forest Stewardship Council is a stakeholder owned system for promoting responsible management of the world's forests [8]. The FSC Principles and Criteria (P&C) apply to all tropical, temperate and boreal forests. Many of the P&C apply also to plantations and partially replanted forests. More detailed standards for these and other vegetation types may be prepared at national and local levels. While the P&C are mainly designed for forests managed for the production of wood products, they are also relevant, to varying degrees, to forests managed for non-timber products and other services [65].	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Y (defined on national or regional level)

Context:
The FSC P&C should be used in conjunction with national and international laws and regulations [65]. FSC CoC certification can be used to demonstrate compliance with public or private procurement policies and specifications such as the EU Ecolabel scheme for furniture, or the U.S. Green Building Leadership in Energy and Environmental Design (LEED) rating system [65].
Status of system:
Over the past 13 years, over 90 million hectares in more than 70 countries are certified.
Planned activities:
Based on a mandate provided by the FSC Membership at the 2008 General Assembly, a Forest Carbon Working Group (FCWG) is established in order to research, advice, and facilitate decision-making processes in relation to the engagement of FSC in initiatives relating to forest-based carbon and development of FSC Policies addressing forest-based carbon management. July 2009: Experts are sought for participation in WG [66].

Structure system or initiative:	
Juridical basis:	Voluntary (trademark)
Participation in system:	FSC has a three-chamber- system with a balanced participation of social, economic and environmental interests. Wide group of stakeholders are members of initiative: academic, government, industry and consultation sectors. Supported by civil society and NGOs [12]. According to [9], FSC has been criticized for not taking national and local circumstances sufficiently into account. The procedures for development of generic standards are established. This requires certification bodies to publicize the steps they are taking to develop the generic standard; to encourage broad stakeholder input into this process; and to liaise with any national or regional FSC body. The document identifies specific stakeholder groups that must be consulted [67]. Requirements for development of FSC-accredited national and regional standards are set out in the National Initiatives Manual. FSC will only accredit standards where it can be shown all relevant stakeholder groups have been consulted / involved in the standard development and decision making process. National /Regional standards do not involve only FSC members, but also a broad range of other stakeholders at national or regional level [67].
Local stakeholder involvement	There is a broad participation of stakeholders in the certification processes [12].
Monitoring performance:	Annual inspections of certification's body office and field work by ASI [12].
Chain of custody system	The CoC standard [68] defines and addresses the basic elements of a CoC management system:

	· Quality management: responsibilities, procedures and records · Product scope: definition of product groups and outsourcing arrangements · Material sourcing: material specifications · Material receipt and storage: identification and segregation · Production control: control of quantities and determination of FSC claims · Sales & delivery: invoicing and transport documentation · Labeling: application of FSC labels on-product and labelling thresholds It specifies the requirements under each system element that, if successfully implemented, allow organizations to sell and label products as FSC Pure, FSC Mixed, or FSC Recycled, or to sell materials as FSC Controlled Wood The principle of mass balance is applied in addition to the track-and-trace system [12]: The system offers 100% physical separation (FSC Pure), and a labeling system for the use of mixtures of certified and uncertified wood (FSC mixed) [9]. Only FSC CoC certified operations are allowed to label products with the FSC trademarks [65]. Non-certified wood is so-called controlled wood (must be demonstrated).
Level of detail CoC system:	Accreditation: FSC system involves the development of an international system to accredit certification systems, which is a more centralized approach than PEFC [9]. FSC states its accreditation program is based on ISO Guide 61 and the accreditation process conforms to the majority of the Guide's requirements. However FSC has come into conflict with the Guide in one significant respect that is the same organization (FSC A.C.) has responsibility both for recognition of standards and for accreditation of certifiers. This problem is recognized by FSC and is being addressed through establishment of separate Accreditation Business Unit and Policy and Standards Unit [67]. FSC is a member of ISEAL. Auditing: FSC requires 3rd party certification by an organization that conforms to one or other of ISO guides 62, 65 and 66 [9]. FSC certification bodies must operate in accordance with procedures set out in the FSC Accreditation Manual (closely parallel with ISO guidelines) [9]. Auditor competency complies with ISO19011 [8]. Verification: All certification carried out by accredited certification bodies and farms are audited at least once a year. The period between certification and the recertification audit must not exceed 5 years [9]. Specific detailed requirements for surveillance visits are described in FSC standards. The methodology for monitoring must include provision for unannounced visits to the forest management enterprise. Monitoring procedures must include review of progress of relevant FSC national and regional initiatives and any changes to normative documents, including national or local legislation, on which certification depends. The auditor must also directly interview a sufficient number of stakeholders to make direct, factual observations of compliance. [67].

Further information on:	
Removal of trade barriers	
Costs:	This cost of setup in America ranges from less than 30 cents per acre to several dollars per acre depending on factors such as size and location of the property. Annual audits cost from less than 6 cents to more than 26 cents per acre. Allows group certification [8]. According to [9], FSC has been criticized for being unnecessarily expensive. Cost indication for area in *Pikanmaa, Finland*, FSC certified, from [69]: Hectares: 860,000 Direct costs, external auditing: 0.25 €/ha per year Direct costs, internal auditing: 0.04 €/ha per year Indirect costs, organizational: 0 €/ha per year Indirect costs, loss of stumpage revenues: 18.84 €/ha per year Cost indication for area in *Gavleborg, Sweden*, FSC (+PEFC) certified, [69]: Hectares: 2,000,000 Direct costs, external auditing: 0.01 €/ha per year

	Direct costs, internal auditing: 0.04 €/ha per year Indirect costs, organizational: 0 €/ha per year Indirect costs, loss of stumpage revenues: 13.5 €/ha per year Cost indication for area in *Norway*, FSC certified, from [69]: Hectares: 3,700 Direct costs, external auditing: 0.38 €/ha per year Direct costs, internal auditing: 0.41 €/ha per year Indirect costs, organizational: 0.27 €/ha per year Indirect costs, loss of stumpage revenues: 1.61 €/ha per year For investigated *FSC certified German forests,* varying in size between 7.825 and 15.824 ha, the direct costs for certification are estimated at 0.20-0.53 €/ha per year and are on average 0.32 €/ha per year. No indirect costs have been taken into account here [9].

Principles

All forest certification standards, recognized by FSC, should be in accordance with a set of internationally developed Forest principles and criteria. The 10 principles are based on principles for forest management covering environmental, social and economic issues elaborated in a set of more detailed criteria [9]. The 10 principles and 56 criteria form the basis for all FSC forest management standards. Based on these 10 principles, the FSC has developed further rules (called policies or standards) that further define and explain certain requirements stipulated in the 10 principles [65]. National initiatives are responsible for developing national/regional certification standards in accordance with FSC Principles. The criteria must be adapted into national, regional and locally applicable indicators and verifiers either by the National Initiatives or, in the case of generic standards, by the certification bodies [67].

List of general principles included [9, 65]:	
1	Compliance with laws and FSC principles: Forest management shall respect all applicable laws of the country, in which they occur, and international treaties and agreements to which the country is a signatory, and comply with all FSC Principles and Criteria.
2	Tenure and use rights and responsibilities: Long-term tenure and use rights to the land and forest resources shall be clearly defined, documented and legally established.
3	Indigenous peoples' rights: The legal and customary rights of indigenous peoples to own use and manage their lands, territories, and resources shall be recognized and respected.
4	Community relations and worker's rights: Forest management operations shall maintain or enhance the long-term social and economic well-being of forest workers and local communities.
5	Benefits from the forests: Forest management operations shall encourage the efficient use of the forest's multiple products and services to ensure economic viability and a wide range of environmental and social benefits.
6	Environmental impact: Forest management shall conserve biological diversity and its associated values, water resources, soils, and unique and fragile ecosystems and landscapes, and, by so doing, maintain the ecological functions and the integrity of the forest.
7	Management plan: A management plan -- appropriate to the scale and intensity of the operations – shall be written, implemented, and kept up to date. The long term objectives of management, and the means of achieving them, shall be clearly stated.
8	Monitoring and assessment: Monitoring shall be conducted -- appropriate to the scale and intensity of forest management -- to assess the condition of the forest, yields of forest products, chain of custody, management activities and their social and environmental impacts.
9	Maintenance of high conservation value forests: Management activities in high conservation value forests shall maintain or enhance the attributes which define such forests. Decisions regarding high conservation value forests shall always be considered in the context of a precautionary approach.
10	Plantations: Plantations shall be planned and managed in accordance with Principles and Criteria 1 - 9, and Principle 10 and its Criteria. While plantations can provide an array of social and economic benefits, and can contribute to satisfying the world's needs for forest products, they should complement the management of, reduce pressures on, and promote the restoration and conservation of natural forests.

- Worldwide set of principles and criteria are translated to national or regional conditions by national working groups with stakeholder participation.
- The actual certification standards are drawn up in accordance with the FSC principles in a national co-operation process [9].

Criteria [65]:	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
1.1 Forest management shall respect all national and local laws and administrative requirements.			
1.2 All applicable and legally prescribed fees, royalties, taxes and other charges shall be paid.			
1.3 In signatory countries, the provisions of all binding international agreements such as CITES, ILO Conventions, ITTA, and Convention on Biological Diversity, shall be respected.			
1.4 Conflicts between laws, regulations and the FSC Principles and Criteria shall be evaluated for the purposes of certification, on a case by case basis, by the certifiers and the involved or affected parties.			
1.5 Forest management areas should be protected from illegal harvesting, settlement and other unauthorized activities.			
1.6 Forest managers shall demonstrate a long-term commitment to adhere to the FSC Principles and Criteria.			
2.1 Clear evidence of long-term forest use rights to the land (e.g. land title, customary rights, or lease agreements) shall be demonstrated.			
2.2 Local communities with legal or customary tenure or use rights shall maintain control, to the extent necessary to protect their rights or resources, over forest operations unless they delegate control with free and informed consent to other agencies.			
2.3 Appropriate mechanisms shall be employed to resolve disputes over tenure claims and use rights. The circumstances and status of any outstanding disputes will be explicitly considered in the certification evaluation. Disputes of substantial magnitude involving a significant number of interests will normally disqualify an operation from being certified.			
3.1 Indigenous peoples shall control forest management on their lands and territories unless they delegate control with free and informed consent to other agencies.			
3.2 Forest management shall not threaten or diminish, either directly or indirectly, the resources or tenure rights of indigenous peoples.			
3.3 Sites of special cultural, ecological, economic or religious significance to indigenous peoples shall be clearly identified in cooperation with such peoples, and recognized and protected by forest managers.			
3.4 Indigenous peoples shall be compensated for the application of their traditional knowledge regarding the use of forest species or management systems in forest operations. This compensation shall be formally agreed upon with their free and informed consent before forest operations commence.			
4.1 The communities within, or adjacent to, the forest management area should be given opportunities for employment, training, and other services.			
4.2 Forest management should meet or exceed all applicable laws and/or regulations covering health and safety of employees and their families.			
4.3 The rights of workers to organize and voluntarily negotiate with their employers shall be guaranteed as outlined in Conventions 87 and 98 of the International Labour Organisation (ILO).			Conventions 87 and 98 of the International Labour Organisation (ILO).
4.4 Management planning and operations shall incorporate the results of evaluations of social impact. Consultations shall be maintained with people and groups (both men and women) directly affected by management operations.			
4.5 Appropriate mechanisms shall be employed for resolving grievances and for providing fair compensation in the case of loss or damage affecting the legal or customary rights, property, resources, or livelihoods of local peoples. Measures shall be taken to avoid such loss or damage.			
5.1 Forest management should strive toward economic viability, while taking into account the full environmental, social, and operational costs of production, and ensuring the investments necessary to maintain the ecological productivity of the forest.			
5.2 Forest management and marketing operations should encourage the optimal use and local processing of the forest's diversity of products.			

5.3 Forest management should minimize waste associated with harvesting and on-site processing operations and avoid damage to other forest resources.			
5.4 Forest management should strive to strengthen and diversify the local economy, avoiding dependence on a single forest product.			
5.5 Forest management operations shall recognize, maintain, and, where appropriate, enhance the value of forest services and resources such as watersheds and fisheries.			
5.6 The rate of harvest of forest products shall not exceed levels which can be permanently sustained.			
6.1 Assessment of environmental impacts shall be completed -- appropriate to the scale, intensity of forest management and the uniqueness of the affected resources – and adequately integrated into management systems.	Assessments shall include landscape level considerations as well as the impacts of on-site processing facilities. Environmental impacts shall be assessed prior to commencement of site-disturbing operations.		
6.2 Safeguards shall exist which protect rare, threatened and endangered species and their habitats (e.g., nesting and feeding areas). Conservation zones and protection areas shall be established, appropriate to the scale and intensity of forest management and the uniqueness of the affected resources. Inappropriate hunting, fishing, trapping and collecting shall be controlled.			
6.3 Ecological functions and values shall be maintained intact, enhanced, or restored, including: a) Forest regeneration and succession. b) Genetic, species, and ecosystem diversity. c) Natural cycles that affect the productivity of the forest ecosystem.			
6.4 Representative samples of existing ecosystems within the landscape shall be protected in their natural state and recorded on maps, appropriate to the scale and intensity of operations and the uniqueness of the affected resources.			
6.5 Written guidelines shall be prepared and implemented to: control erosion; minimize forest damage during harvesting, road construction, and all other mechanical disturbances; and protect water resources.			
6.6 Management systems shall promote the development and adoption of environmentally friendly non-chemical methods of pest management and strive to avoid the use of chemical pesticides. World Health Organization Type 1A and 1B and chlorinated hydrocarbon pesticides; pesticides that are persistent, toxic or whose derivatives remain biologically active and accumulate in the food chain beyond their intended use; as well as any pesticides banned by international agreement, shall be prohibited. If chemicals are used, proper equipment and training shall be provided to minimize health and environmental risks.			World Health Organization Type 1A and 1B
6.7 Chemicals, containers, liquid and solid non-organic wastes including fuel and oil shall be disposed of in an environmentally appropriate manner at off-site locations.			
6.8 Use of biological control agents shall be documented, minimized, monitored and strictly controlled in accordance with national laws and internationally accepted scientific protocols. Use of genetically modified organisms shall be prohibited.			
6.9 The use of exotic species shall be carefully controlled and actively monitored to avoid adverse ecological impacts.			
6.10 Forest conversion to plantations or non-forest land uses shall not occur, except in circumstances where conversion: a) entails a very limited portion of the forest management unit; and b) does not occur on high conservation value forest areas; and c) Will enable clear, substantial, additional, secure, long term conservation benefits across the forest management unit.			
7.1 The management plan and supporting documents shall provide: a) Management objectives. b) Description of the forest resources to be managed, environmental limitations, land use and ownership status, socio-economic conditions, and a profile of adjacent lands. c) Description of silvicultural and/or other management system d) Rationale for rate of annual harvest and species selection.	c) based on the ecology of the forest in question and information gathered through resource inventories.		

e) Provisions for monitoring of forest growth and dynamics. f) Environmental safeguards based on environmental assessments. g) Plans for the identification and protection of rare, threatened and endangered species. h) Maps describing the forest resource base including protected areas, planned management activities and land ownership. i) Description and justification of harvesting techniques and equipment to be used.			
7.2 The management plan shall be periodically revised to incorporate the results of monitoring or new scientific and technical information, as well as to respond to changing environmental, social and economic circumstances.			
7.3 Forest workers shall receive adequate training and supervision to ensure proper implementation of the management plan.			
7.4 While respecting the confidentiality of information, forest managers shall make publicly available a summary of the primary elements of the management plan, including those listed in Criterion 7.1.			
8.1 The frequency and intensity of monitoring should be determined by the scale and intensity of forest management operations as well as the relative complexity and fragility of the affected environment. Monitoring procedures should be consistent and replicable over time to allow comparison of results and assessment of change.			
8.2 Forest management should include the research and data collection needed to monitor, at a minimum, the following indicators: a) Yield of all forest products harvested. b) Growth rates, regeneration and condition of the forest. c) Composition and observed changes in the flora and fauna. d) Environmental and social impacts of harvesting and other operations. e) Costs, productivity, and efficiency of forest management.			
8.3 Documentation shall be provided by the forest manager to enable monitoring and certifying organizations to trace each forest product from its origin, a process known as the "chain of custody."			
8.4 The results of monitoring shall be incorporated into the implementation and revision of the management plan.			
8.5 While respecting the confidentiality of information, forest managers shall make publicly available a summary of the results of monitoring indicators, including those listed in 8.2			
9.1 Assessment to determine the presence of the attributes consistent with High Conservation Value Forests will be completed, appropriate to scale and intensity of forest management.			
9.2 The consultative portion of the certification process must place emphasis on the identified conservation attributes, and options for the maintenance thereof.			
9.3 The management plan shall include and implement specific measures that ensure the maintenance and/or enhancement of the applicable conservation attributes consistent with the precautionary approach. These measures shall be specifically included in the publicly available management plan summary.			
9.4 Annual monitoring shall be conducted to assess the effectiveness of the measures employed to maintain or enhance the applicable conservation attributes.			
10.1 The management objectives of the plantation, including natural forest conservation and restoration objectives, shall be explicitly stated in the management plan, and clearly demonstrated in the implementation of the plan.			
10.2 The design and layout of plantations should promote the protection, restoration and conservation of natural forests, and not increase pressures on natural forests. Wildlife corridors, streamside zones and a mosaic of stands of different ages and rotation periods shall be used in the layout of the plantation, consistent with the scale of the operation. The scale and layout of plantation blocks shall be consistent with the patterns of forest stands found within the natural landscape.			
10.3 Diversity in the composition of plantations is preferred, so as to enhance economic, ecological and social stability. Such diversity may include the size and spatial distribution of management units within the landscape, number and genetic composition of species, age classes and structures.			

10.4 The selection of species for planting shall be based on their overall suitability for the site and their appropriateness to the management objectives. In order to enhance the conservation of biological diversity, native species are preferred over exotic species in the establishment of plantations and the restoration of degraded ecosystems.	Exotic species, which shall be used only when their performance is greater than that of native species, shall be carefully monitored to detect unusual mortality, disease, or insect outbreaks and adverse ecological impacts.		
10.5 A proportion of the overall forest management area, appropriate to the scale of the plantation and to be determined in regional standards, shall be managed so as to restore the site to a natural forest cover.			
10.6 Measures shall be taken to maintain or improve soil structure, fertility, and biological activity. The techniques and rate of harvesting, road and trail construction and maintenance, and the choice of species shall not result in long term soil degradation or adverse impacts on water quality, quantity or substantial deviation from stream course drainage patterns.			
10.7 Measures shall be taken to prevent and minimize outbreaks of pests, diseases, fire and invasive plant introductions. Integrated pest management shall form an essential part of the management plan, with primary reliance on prevention and biological control methods rather than chemical pesticides and fertilizers. Plantation management should make every effort to move away from chemical pesticides and fertilizers, including their use in nurseries.	The use of chemicals is also covered in Criteria 6.6 and 6.7.		
10.8 Appropriate to the scale and diversity of the operation, monitoring of plantations shall include regular assessment of potential on-site and off-site ecological and social impacts, in addition to those elements addressed in principles 8, 6 and 4. No species should be planted on a large scale until local trials and/or experience have shown that they are ecologically well-adapted to the site, are not invasive, and do not have significant negative ecological impacts on other ecosystems. Special attention will be paid to social issues of land acquisition for plantations, especially the protection of local rights of ownership, use or access.	Impacts: e.g. natural regeneration, effects on water resources and soil fertility, and impacts on local welfare and social well-being		
10.9 Plantations established in areas converted from natural forests after November 1994 normally shall not qualify for certification. Certification may be allowed in circumstances where sufficient evidence is submitted to the certification body that the manager/owner is not responsible directly or indirectly of such conversion.			

PEFC: Program for Endorsement of Forest Certification (forest)

General characteristics:	
Status:	In implementation
Geographical coverage:	International
Scope:	All forest types
Initiator system:	Founded in 1999 by PEFC governing bodies. Umbrella organization to evaluate and endorse national standards around the world.

Short summary system or initiative:	Extension system:	
PEFC is a global umbrella organization for the assessment of and mutual recognition of national forest certification schemes developed in a multi-stakeholder process. These national schemes build upon the inter-governmental processes for the promotion of sustainable forest management	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Y
Context:		
The national schemes build upon the inter-governmental processes for the promotion of sustainable forest management. This is supported by 149 governments in the world covering 85% of the world's forest area.		
Status of system:		
PEFC has in its membership 35 independent national forest certification systems of which 25 to date have been through a rigorous assessment process involving public consultation and the use of independent assessors to provide the assessments on which mutual recognition decisions are taken by the membership. These 25 systems account for more than 200 million hectares of certified forests. The other national members' schemes are at various stages of development and are working towards mutual recognition under the PEFC processes.		
Planned activities:		
-		

Structure system or initiative:	
Juridical basis:	Voluntary.
Participation in system:	PEFC participation models differ from country to country [12]. Participation of academic, NGO, industry and supporting actors. Strong support of forest industry and forest owner. Weak or no support of NGOs. Forest industry holds majority [12]. PEFC is criticized for having an unequal balance in membership between industry and other stakeholders [9].
Local stakeholder involvement	Consultation of stakeholders in certification process is not required [9].
Monitoring performance:	PEFC standards find a renewal every 5 years. Random inspection after award of certificate.
Chain of custody system	Chain of Custody tracks products from forest through each stage of manufacturing and distribution [12]. The system offers 100% physical separation and inventory control/wood flow accounting. Under the latter, PEFC allows two different procedures [9]: 1. % input - % output system 2. minimum average system: 70% by volume or dry weight For non-certified wood: required that no wood from illegal logging or strictly protected areas enters the chain (self-declaration)
Level of detail CoC system:	<u>Accreditation:</u> PEFC operates by endorsing fully autonomous national forest certification schemes capable of independent existence outside the PEFC framework [9]. PEFC is using national and local certification bodies for the certification of forests [12]. Accreditation of the certification body is the responsibility of the national accreditation organization [9]. <u>Audit:</u> Reviewer is an accredited third party auditor (Certification body). PEFC requires 3rd party certification by an organization that conforms to one or other of ISO guides 62, 65 and 66 [9]. <u>Verification:</u> All certification carried out by accredited certification are audited at least once a

	year. The period between certification and the recertification audit must not exceed 5 years [9] Auditors are ISO 19011 certified. Verification includes internal and external inspections, records, documentation and data management system [70]. PEFC has been criticized for having endorsed weak systems especially SFI, a system that initially did not have 3rd party certification. Furthermore, some PEFC endorsed standards (SFI, CSA) allow an industrial forest company to customize the standard against it will be certified. This means that the standard of these schemes varies on a case-by-case basis [9].

Further information on:	
Removal of trade barriers	
Costs:	In Norway and Sweden, timber trading organizations and forest industry have paid price premiums with good results [9]. Cost indication for area in *Gavleborg, Sweden*, PEFC (+FSC) certified, [69]: Hectares: 2,000,000 Direct costs, external auditing: 0.01 €/ha per year Direct costs, internal auditing: 0.04 €/ha per year Indirect costs, organizational: 0 €/ha per year Indirect costs, loss of stumpage revenues: 13.5 €/ha per year Cost indication for area in *Gavleborg, Sweden*, PEFC certified, [69]: Hectares: 28,542 Direct costs, external auditing: 0.08 €/ha per year Direct costs, internal auditing: 0.38 €/ha per year Indirect costs, organizational: 0.5 €/ha per year Indirect costs, loss of stumpage revenues: 0 €/ha per year

Principles

PEFC plays – in contrary of FSC - no role in the development of international forestry principles, and instead relies on inter-governmental principles developed and adapted for different regions of the world (e.g. Pan European Principles for European Forests) [9].
It is mentioned by [9] that PEFC endorsed systems are often based on system standards (e.g. specify the management system that must be in place) instead of performance standards (a minimum level of performance that must be achieved.

The national PEFC certification criteria shall [71]:

- Be compatible and consistent with the current PEOLG or ATO/ITTO PCI (only for countries covered by ATO/ITTO PCI) or the relevant ITTO guidelines (only for ITTO producing member countries except those covered by ATO/ITTO PCI) and any deviations, (e.g., based on the non-adherence of a specific issue) shall be explicitly justified.
- Include management and performance requirements that are applicable at the level of a forest management unit and optionally also at multisite (i.e. group and regional) level.
- Require compliance with national legislation.
- Be in compliance with the fundamental International Labour Organisation (ILO) Conventions. If the requirements of the Conventions are incorporated into national legislation, which is the case when a country has ratified the Conventions, the certification criteria shall require compliance with the national legislation relevant to the core ILO conventions.

ATO/ITTO PCI form the reference basis when national and regional certification criteria are elaborated, amended or revised and assessed in countries which are covered by the ATO/ITTO process. In addition to ATO/ITTO PCI the national certification criteria shall address the following issues if relevant in the nation/region:

- maintenance, increase and monitoring of forest health and vitality including biotic risks (e.g. fire),
- use of fertilizers,
- management and prevention of damages caused by animal grazing in forests (domestic and wild animals),
- Maintenance of adequate quantity and quality of old, dead and decaying trees in forests to safeguard biological diversity.

The fundamental Conventions of the ILO, (outlined below) as amended, whether ratified or not, shall be respected in the implementation of SFM. The fundamental ILO Conventions are as follows [71]:
No 29: Forced Labour, 1930
No 87: Freedom of Associations and Protection of the Right to Organise, 1948
No 98: Right to Organise and Collective Bargaining, 1949
No 100: Equal Remuneration. 1951
No 105: Abolition of Forced Labour, 1957
No 111: Discrimination (Employment and Occupation), 1958
No 138: Minimum Age for Admission to Employment, 1973
No 182: Worst Forms of Child Labour, 1999

Other international conventions relevant to forest management and ratified by the country will be respected through the legislative framework. Such conventions include, amongst others, e.g., Convention on Biological Diversity, Kyoto Protocol and Carbon Sinks, Convention on International Trade in Endangered Species of Wild Fauna and Flora and Biosafety Protocol [71].

MCPFE: Pan European Criteria for SFM (forest)

General characteristics:	
Status:	In implementation
Geographical coverage:	Europe
Scope:	Sustainable Forest Management on country level (monitoring and reporting)
Initiator system:	

Short summary system or initiative:	Extension system:	
The Ministerial Conference on the Protection of Forests in Europe (MCFPE) is a political initiative towards the protection and sustainable management of forests throughout the region [72].	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Y
Context:		
Since 1990, nineteen Resolutions have been adopted at five Ministerial Conferences. The ministerial commitments are positioned within three pillars of SFM and comprise strengthening synergies by promoting a balance between the economic, ecological as well as social and cultural dimensions of SFM [72].		
Status of system:		
The political commitments of the MCFPE involve 46 European countries, the European Union. There is cooperation with other world countries and international organizations [72].		
Planned activities:		
The MCPFE Working Group on “sustainability criteria” for forest biomass production, including bioenergy, has assessed the applicability and potential need for update of the MCPFE tools for sustainable forest management in relation to new demands. The WG recommended that the MCPFE tools should be refined and further developed to serve assessment of performance and verification of sustainable forest management. The WG recommended that the role of forest management in relation to climate change mitigation and adaptations should be clarified and strengthened for actions in the signatory countries of the MCPFE. The working group’s suggestions include further investigation of strategies for adaptation of forests to climate change, implications of land use changes on climate change mitigation and adaptation, and mitigation potentials of, e.g. bioenergy and wood constructions [73].		

Structure system or initiative:	
Juridical basis:	
Participation in system:	
Local stakeholder involvement	
Monitoring performance:	
Chain of custody system	
Level of detail CoC system:	

Further information on:	
Removal of trade barriers	
Costs:	

List of principles included [74]:	
1	Criterion 1: Maintenance and Appropriate Enhancement of Forest Resources and their contribution to Global Carbon Cycles
2	Criterion 2: Maintenance of Forest Ecosystem Health and Vitality
3	Criterion 3: Maintenance and Encouragement of Productive Functions of Forests (Wood and Non-Wood)
4	Criterion 4: Maintenance, Conservation and Appropriate Enhancement of Biological Diversity in Forest Ecosystems
5	Criterion 5: Maintenance and Appropriate Enhancement of Protective Functions in Forest Management (notably Soil and Water)
6	Criterion 6: Maintenance of Other Socio-Economic Functions and Conditions

Criteria [74]:	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
Criterion 1: Maintenance and Appropriate Enhancement of Forest Resources and their contribution to Global Carbon Cycles	1 Forest area: Area of forest and other wooded land, classified by forest type and by availability for wood supply, and share of forest and other wooded land in total land area 2 Growing stock: Growing stock on forest and other wooded land, classified by forest type and by availability for wood supply 3 Age structure and/or diameter distribution: Age structure and/or diameter distribution of forest and other wooded land, classified by forest type and by availability for wood supply *4* Carbon stock: Carbon stock of woody biomass and of soils on forest and other wooded land Qualitative Indicator on Policies for: Land use and forest area and OWL + Carbon balance		
Criterion 2: Maintenance of Forest Ecosystem Health and Vitality	1. Deposition of air pollutants: Deposition of air pollutants on forest and other wooded land, classified by N, S and base cations 2. Soil condition: Chemical soil properties (pH, CEC, C/N, organic C, base saturation) on forest and other wooded land related to soil acidity and eutrophication, classified by main soil types 3. Defoliation: Defoliation of one or more main tree species on forest and other wooded land in each of the defoliation classes “moderate”, “severe” and “dead” 4. Forest damage: Forest and other wooded land with damage, classified by primary damaging agent (abiotic, biotic and human induced) and by forest type Qualitative Indicator on Policies for: Health and Vitality		
Criterion 3: Maintenance and Encouragement of Productive Functions of Forests (Wood and Non-Wood)	1. Increment and fellings: Balance between net annual increment and annual fellings of wood on forest available for wood supply 2. Roundwood: Value and quantity of marketed roundwood 3. Non-wood goods: Value and quantity of marketed non-wood goods from forest and other wooded land 4. Services: Value of marketed services on forest and other wooded land 5. Forests under management plans: Proportion of forest and other wooded land under a management plan or equivalent Qualitative Indicator on Policies for: Production and use of wood + Production and use of non-wood goods and services, provision of especially recreation		
Criterion 4: Maintenance, Conservation and Appropriate Enhancement of Biological Diversity in Forest Ecosystems	1. Tree species composition: Area of forest and other wooded land, classified by number of tree species occurring and by forest type 2. Regeneration: Area of regeneration within even-aged stands and uneven aged stands, classified by regeneration type 3. Naturalness: Area of forest and other wooded land, classified by “undisturbed by man”, by “semi-natural” or by “plantations”, each by forest type 4. Introduced tree species: Area of forest and other wooded land dominated by introduced tree species 5. Deadwood: Volume of standing deadwood and of lying dead-wood on forest and other wooded land classified by forest type 6. Genetic resources: Area managed for conservation and utilization of forest tree genetic resources (in situ and ex situ gene conservation) and area managed for seed production 7. Landscape pattern: Landscape-level spatial pattern of forest cover 8. Threatened forest species: Number of threatened forest species, classified according to IUCN Red List categories in relation to total number of forest species 9. Protected forests: Area of forest and other wooded land protected to conserve biodiversity, landscapes and specific natural elements, according to MCPFE Assessment Guidelines Qualitative Indicator on Policies for: Biodiversity	MCPFE Assessment Guidelines on protection of forests	IUCN Red List
Criterion 5: Maintenance and Appropriate Enhancement of Protective Functions in Forest Management (notably Soil and Water)	1. Protective forests – soil, water and other ecosystem functions: Area of forest and other wooded land designated to prevent soil erosion, to preserve water resources, or to maintain other forest ecosystem functions, part of MCPFE Class “Protective Functions” 2. Protective forests – infrastructure and managed natural resources: Area of forest and other wooded land designated to protect infrastructure and managed natural resources against natural hazards, part of MCPFE Class “Protective Functions” Qualitative Indicator on Policies for: Protective forests and other wooded land (OWL)		
Criterion 6: Maintenance of Other Socio-	1. Forest holdings: Number of forest holdings, classified by ownership categories and size classes		

Economic Functions and Conditions	2. Contribution of forest sector to GDP: Contribution of forestry and manufacturing of wood and paper products to gross domestic product 3. Net revenue: Net revenue of forest enterprises 4. Expenditures for services: Total expenditures for long-term sustainable services from forests 5. Forest sector workforce: Number of persons employed and labor input in the forest sector, classified by gender and age group, education and job characteristics 6. Occupational safety and health: Frequency of occupational accidents and occupational diseases in forestry 7. Wood consumption: Consumption per head of wood and products derived from wood 8. Trade in wood: Imports and exports of wood and products derived from wood 9. Energy from wood resources: Share of wood energy in total energy consumption, classified by origin of wood 10. Accessibility for recreation: Area of forest and other wooded land where public has a right of access for recreational purposes and indication of intensity of use 11. Cultural and spiritual values: Number of sites within forest and other wooded land designated as having cultural or spiritual values Qualitative Indicator on Policies for: Economic viability + Employment (incl. safety and health) + Public awareness and participation + Research, training and education + Cultural and spiritual values		

ITTO and ATO/ITTO (tropical forest)

General characteristics:	
Status:	In implementation
Geographical coverage:	Countries with tropical forests
Scope:	Sustainable forest management (at national and forest management unit level)
Initiator system:	ITTO started with the development of criteria and indicators (C&I) for the sustainable management of natural tropical forests in the early 1990s [75]

Short summary system or initiative:	Extension system:	
The purpose of the C&I from the International Tropical Timber Organization (ITTO) is to provide member countries with a tool for monitoring, assessing and reporting changes and trends in forest conditions and management systems at the national and FMU levels [76].	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Y
Context:		
Status of system:		
In implementation. The following countries are covered by the ATO/ITTO process: Angola, Cameroon, Central African Republic, Congo, Cote d'Ivore, Equatorial Guinea, Gabon, Ghana, Liberia, Sao Tome and Principe, Tanzania and Zaire [71].		
Planned activities:		

Structure system or initiative:	
Juridical basis:	Voluntary
Participation in system:	The ATO/ITTO principles, criteria and indicators for the sustainable management of African natural tropical forests are a collaboration between the African Timber Organization and ITTO
Local stakeholder involvement	
Monitoring performance:	Monitoring on a national level
Chain of custody system	-
Level of detail CoC system:	-

Further information on:	
Removal of trade barriers	
Costs:	

The ATO/ITTO principles contain principles related to a national level and to a Forest Management Unit-level [77] for the sustainable management of African Natural Tropical Forests. The ITTO principles contain C&I on the sustainable management of tropical forests in general [76].

List of ATO/ITTO principles included [77] on Sustainable Management of African Natural Tropical Forests:	
1	Principle 1: Sustainable forest utilization and maintenance of the multiple functions of forests are a high political priority (not further outlined in criteria, on national level)
2	Principle 2: The forest management unit (FMU), designated for whatever form of land-use, is sustainably managed with a view to supplying the required goods and services.
3	Principle 3: The main ecological functions of the forest are maintained.
4	Principle 4: According to the importance and intensity of forest operations, the FMU manager contributes to the improvement of the economic and social well-being of workers in the FMU and of local populations.
List of ITTO criteria included on the sustainable management of tropical forests [76]: *No diversification is made between principles and criteria*	
1	Criterion 1: Enabling conditions for sustainable forest management
2	Criterion 2: Extent and condition of forests
3	Criterion 3: Forest ecosystem health
4	Criterion 4: Forest production
5	Criterion 5: Biological diversity
6	Criterion 6: Soil and water protection
7	Criterion 7: Economic, social and cultural aspects

Criteria from ATO/ITTO principles [77]:	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
Criterion 2.1 Forest management complies with the national policies and legislation in force in the country where it is implemented, and also with all the international treaties the country has ratified.	• 2.1.1 Forest management respects all local and national laws and meets all administrative requirements. • 2.1.2 Taxes, royalties and other fiscal payments established by law are paid.		
Criterion 2.2 The FMU is managed with well-defined and clearly established objectives compatible with sustainable forest management.	• 2.2.1 The management of the FMU is implemented on the basis of a legally assigned title deed, for duration compatible with the defined objectives of the FMU with a view to achieving sustainable forest management. • 2.2.2 The forest concessionaire demonstrates that it employs labour with certified competence in forest management. • 2.2.3 The forest concessionaire has a complete and approved forest management document, which includes a forest management plan, a harvesting plan, a wildlife management plan, and other relevant documents, stating the FMU's objectives, which are compatible with sustainable forest management. • 2.2.4 A concession agreement is annexed to the forest management document which sets the operating modalities and the rights and obligations of the forest concessionaire and sub-contractors operating in the FMU. • 2.2.5 The forest management document and the concession agreement are formally approved by the relevant authorities. • 2.2.6 The forest management document is effectively implemented as soon as it is approved. o 2.2.6.5 The clearing of forest for farming and related agricultural activities in and around logging yards is controlled and kept within acceptable limits. o 2.2.6.6 All management activities are well documented in a manner that enables their monitoring. o 2.2.6.7 Regular and frequent field visits for evaluation are undertaken. • 2.2.7 A minimum infrastructure needed for forest use is maintained. • 2.2.8 While appreciating the need to respect the confidentiality of information, the forest concessionaire provides stakeholders with a summary of the basic components of the forest management document. *Not all sub-indicators are listed here.*		
2.3 The sustainable production of timber is ensured both in quantity and quality.	• 2.3.1 The pre-harvest inventory is carried out efficiently, in conformity with the standards in force, at least three months before harvesting. • 2.3.2 The felling rotation and yield are clearly determined and respected in accordance with the principles of sustainable production. • 2.3.3 All harvesting is in conformity with the forest management document and the clauses of the concession agreement. • 2.3.4 Wastage is minimized at all stages of production and processing. • 2.3.5 The forest concessionaire is able to provide all necessary documentation to monitoring and certification bodies to enable them to follow the chain of custody of each forest product from its origin. • Indicator 2.3.6 the company managing the FMU develops effective mechanisms for the optimal commercialization and promotion of its forest products. *Not all sub-indicators are listed here.*		
2.4 The silvicultural techniques implemented in the FMU are compatible with the objectives of sustainable forest management and are well adapted to the needs of management in the FMU and to the expected production.	• 2.4.1 Adequate efforts are made to define, verify and adjust, where necessary, silvicultural techniques. • 2.4.2 All appropriate silvicultural treatments are applied at the level of the individual tree rather than at the forest stand level. • 2.4.3 The harvesting of multi-purpose tree species for timber does not negatively impact on their other forms of utilization. • 2.4.4 The concessionaire develops a staff training policy. *Not all sub-indicators are listed here.*		IUCN Red List
Criterions 2.5 Within the FMU, NTFPs are harvested on a sustainable basis, in consultation with relevant	• 2.5.1 NTFPs are in use, and their bases for use are identified. • 2.5.2 The necessary knowledge for the sustainable utilization of NTFPs is available. • 2.5.3 The use of NTFPs is rationalized.		

stakeholders.	*Not all sub-indicators are listed here.*		
Criterion 2.6 Forest management is revised periodically, or when necessary due to unforeseen circumstances.	• 2.6.1 There is a continuous monitoring/evaluation of the implementation of forest management. • 2.6.2 The forest management document is revised according to a pre-determined periodicity defined at the national level. *Not all sub-indicators are listed here.*		
Criterion 3.1: The sustainable management of the forest resources is based on a dynamic acquisition of knowledge on ecology.	• Available knowledge allows an ecological assessment and diagnosis of the forest ecosystems. o Updated maps are available for vegetation type, growth stages and intensity of harvest. o There are topographical, soil, hydrological network and infrastructure maps. o Databases on forest fauna and flora and other uses are available. o Maps are available on the distribution of fauna showing zones of high density and any migration routes. o There are updated maps or data on the distribution of species to be harvested and those that are endangered, rare or endemic. • Impact studies are carried out, in relation to the scale of harvesting, in accordance with the level and extent of scarcity of any resources of concern. • These studies are incorporated into the forest management document. • New scientific and technical data are synthesized periodically. • 3.1.4 The results of monitoring and new scientific findings or technical data are taken into account to improve forest management and harvesting practices. *Not all sub-indicators are listed here*		
Criterion 3.2 The impact of harvesting activities on the structure of the forest is minimized.	• 3.2.1 Reduced impact logging techniques are defined at national level and implemented. • 3.2.2 The harvesting methods do not impair the original structure and diversity of the forest. *Not all sub-indicators are listed here*		
Criterion 3.3 The impact of harvesting activities on biodiversity is minimized.	• 3.3.1 At the forest concession level, decisions concerning forests with high conservation value are taken within the context of the precautionary principle. • 3.3.2 Adequate procedures and guidelines exist and are implemented to identify and protect, in a manner which is representative of the diversity of habitats and at a scale adapted to the subject to be preserved: a) Endangered, rare or threatened species of fauna and flora; and • Other biological components of the forest of particular interest, such as reproduction sites, rare habitats and key species. o 3.3.2.1 Sensitive areas selected during the ecological survey and assessments are included in the protected zones. o 3.3.2.2 There is a map showing the protected zones and other forest areas where harvesting is excluded. o 3.3.2.3 The limits of protected zones are clearly defined and marked in the field. o 3.3.2.4 Standardized data on fauna and flora are available. o 3.3.3 The diversity and relative abundance of fauna species do not change significantly. o 3.3.4 The diversity and density of flora species are not significantly modified by harvesting. o 3.3.4.1 Rare and endemic species with a confined area of distribution are protected. o 3.3.4.2 The species' diversity of plants in the undergrowth of forests restored after harvesting is similar to that noted in intact forests. o 3.3.4.3 The use of biological control agents is documented, minimized, monitored and strictly controlled in accordance with national laws and internationally accepted scientific protocols. The use of genetically modified organisms is prohibited. • 3.3.4.4 The use of exotic species is carefully controlled and actively monitored to avoid adverse ecological impacts. *Not all sub-indicators are listed here*		
Criterion 3.4 The natural regeneration capacity of the forests is ensured.	• 3.4.1 The conditions for natural regeneration are fulfilled and regeneration processes are maintained. • 3.4.2 Measures are taken to promote natural regeneration whenever necessary. *Not all sub-indicators are listed here*		
Criterion 3.5 The impact of harvesting activities on water, soils and slopes is	• 3.5.1 The flow rate and quality of water are maintained.		World Health Organization Type 1A

minimized.	• 3.5.2 The impact of harvesting activities on the biological, physical and chemical characteristics of soils and on hill slopes is minimized. o 3.5.2.4 Management systems promote the development and adoption of environmentally friendly, non-chemical methods of pest management and strive to avoid the use of chemical pesticides. World Health Organization Type 1A and 1B and chlorinated hydrocarbon pesticides, pesticides that are persistent, toxic or whose derivatives remain biologically active and accumulate in the food chain beyond their intended use, and any pesticides banned by international agreement, are prohibited. o 3.5.2.5 Chemicals, containers and liquid and solid non-organic wastes including fuel and oil are disposed of in an environmentally appropriate manner. • 3.5.3 Water and soil restoration programs are implemented whenever necessary. *Not all sub-indicators are listed here*		and 1B and chlorinated hydrocarbon pesticides
Criterion 4.1 The rights and responsibilities of workers in the FMU and local populations are clearly defined acknowledged and respected.	• 4.1.1 The legal and customary rights of local populations in respect to the ownership, use and tenure of the forest land and resources are clearly defined, acknowledged and respected. • 4.1.2 The modalities of access to natural resources are clearly defined and respected by all. • 4.1.3 All relevant labour code regulations are applied. o The labour code and other related regulations (collective agreements, rules of procedure, memoranda, etc) are respected. o Wages and social benefits are comparable to national norms. • 4.1.4 Information is provided - all stakeholders are fully informed of their rights and duties. • 4.1.5 Damages caused are compensated according to the norms in force or after negotiation. *Not all sub-indicators are listed here*		
Criterion 4.2 The concessionaire encourages the participation of local populations present in the FMU in the management of forest resources.	• 4.2.1 The concessionaire sets up ad hoc bodies for consultation and negotiation with local populations. • 4.2.2 The procedure for dialogue and the resolution of conflicts is functional both between stakeholders and within each stakeholder body. • 4.2.3 All stakeholders participate in the control of natural resources management on the basis of a protocol accepted by all. • 4.2.4 Procedures for consultation with populations during the establishment and demarcation of forest concession boundaries are respected. • 4.2.5 Mechanisms for applying sanctions in the case of rule violations are in place and agreed by stakeholders. *Not all sub-indicators are listed here*		
Criterion 4.3 All stakeholders consider the share of benefits derived from forests to be satisfactory.	• 4.3.1 The forest concessionaire ensures that the populations living within or near the FMU receive a portion of the revenue generated by the exploitation of the FMU. • 4.3.2 Local communities living in or near the harvested forest area benefit preferentially from opportunities in employment, training and other services. o 4.3.2.1 The percentage of local people recruited is higher than that of non-locals, given equal competence. o 4.3.2.2 The concessionaire maintains a recruitment and training policy for young people originating from local communities. o 4.3.2.3 The concessionaire makes provision • 4.3.3 In accordance with the importance and impact of the forest operations at the local level, the concessionaire contributes to the development of the local economy. *Not all sub-indicators are listed here*		
Criterion 4.4 According to the importance and impact of the forestry operations, the concessionaire contributes to improving the health and education of local populations.	• 4.4.1 The concessionaire takes preventive measures to minimize any professional hazards in relation to forestry activities. • 4.4.1.1 Working conditions are in accordance with the labour code and/or ILO recommendations. • 4.4.2 Health-related aspects of living conditions are improved for employees and their families. • 4.4.3 The health conditions of local populations are improved as a result of the forestry activities. • 4.4.4 The concessionaire contributes to the basic education of local populations and workers present in the FMU, in accordance with the contractual provisions established consistent with national norms.		

	Not all sub-indicators are listed here		
Criteria from ITTO principles [76]:	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
Criterion 1: Enabling conditions for sustainable forest management	1.1 Existence and implementation of policies, laws and regulations to govern forest management 1.2 Forest tenure and ownership 1.3 Amount of funding in forest management, administration, research and human resource development 1.4 Existence and implementation of economic instruments and other incentives to encourage sustainable forest management 1.5 Structure and staffing of institutions responsible for sustainable forest management 1.6 Number of professional and technical personnel at all levels to perform and support forest management 1.7 Existence of communication strategies and feedback mechanisms to increase awareness of sustainable forest management 1.8 Existence of, and ability to apply, appropriate technology to practice sustainable forest management and the efficient utilization and marketing of forest products 1.9 Capacity and mechanisms for planning sustainable forest management and for periodic monitoring, evaluation and feedback on progress 1.10 Public participation in forest management planning, decision-making, data collection, monitoring and assessment 1.11 Existence of forest management plans		
Criterion 2: Extent and condition of forests	2.1 Extent (area) and percentage of total land area under comprehensive land-use plans 2.2 Extent (area) of forests committed to production and protection 2.3 Extent (area) and percentage of total land area under each forest type 2.4 Percentage of PFE with boundaries physically demarcated 2.5 Changes in forested area 2.6 Forest condition		
Criterion 3: Forest ecosystem health	1 Extent and nature of forest encroachment, degradation and disturbance caused by humans and the control procedures applied 2 Extent and nature of forest degradation and disturbance due to natural causes and the control procedures applied		
Criterion 4: Forest production	4.1 Extent and percentage of forest for which inventory and survey procedures have been used to define the quantity of the main forest products 4.2 Actual and sustainable harvest of wood and non-wood forest products 4.3 Composition of harvest 4.4 Total amount of carbon stored in forest stands 4. Planning and control procedures 4.5 Existence and implementation of: 1. forest harvesting/operational plans (within forest management plans); and 2. other harvesting permits (small-, medium- and large-scale permits without forest management plans) 4.6 Extent of compartments/coupes harvested according to: (a) harvesting/operational plans; and (b) any other harvesting/cutting permit 4.7 Existence of a log-tracking system or similar control mechanisms 4.8 Long-term projections, strategies and plans for forest production 4.9 Availability of historical records on the extent, nature and management of forests Silvicultural and harvesting guidelines 4.10 Availability and implementation of silvicultural guidelines for timber and non-wood forest products 4.11 Availability and implementation of harvesting guidelines for timber and non-wood forest products 4.12 Area over which silvicultural and harvesting guidelines are effectively implemented		
Criterion 5: Biological diversity	5.1 Protected areas containing forests 5.2 Protected areas connected by biological corridors or 'stepping stones'		

	5.3 Existence and implementation of procedures to identify and protect endangered, rare and threatened species of forest-dependent flora and fauna 5.4 Number of endangered, rare and threatened forest-dependent species 5.5 Measures for in situ and/or ex situ conservation of genetic variation within commercial, endangered, rare and threatened species of forest flora and fauna 5.6 Existence and implementation of procedures for the protection and monitoring of biodiversity in production forests by: a) retaining undisturbed areas; b) protecting rare, threatened and endangered species; c) protecting features of special biological interest (eg nesting sites, seed trees, niches, keystone species, etc); and d) assessing recent changes in (a), (b) and (c) above through inventories, monitoring/ assessment programs and comparison with control areas 5.7 Extent and percentage of production forest that has been set aside for biodiversity conservation		
Criterion 6: Soil and water protection	1. Extent and percentage of total forest area managed exclusively for the protection of soil and water 2. Procedures to ensure the protection of downstream catchment values 3. Procedures to protect soil productivity and water retention capacity within production forests 4. Procedures for forest engineering, including: • drainage requirements; • conservation of buffer strips along streams and rivers; • protection of soils from compaction by harvesting machinery; and • protection of soil from erosion during harvesting operations 5. Extent and percentage of areas in production PFE that have been defined as environmentally sensitive (eg very steep or erodible) and protected		
Criterion 7: Economic, social and cultural aspects	1. Value and percentage contribution of the forestry sector to gross domestic product (GDP) 2. Value of domestically produced wood, non-wood forest products and environmental services in: i. domestic markets; ii. export markets; and iii. informal markets including subsistence and illegal activities (estimate) 3. Forest products' industry structure and efficiency 4. Existence and implementation of mechanisms for the equitable sharing of the costs and benefits of forest management 5. Existence and implementation of conflict-resolution mechanisms for resolving disputes between forest stakeholders 6. Number of people depending on forests for their livelihoods 7. Training, capacity-building and manpower development programs for forest workers 8. Existence and implementation of procedures to ensure the health and safety of forest workers 9. Area of forests upon which people are dependent for subsistence uses and traditional and customary lifestyles 10. Number and extent of forest sites available primarily for: a) research and education; and b) recreation 11. Number of important archaeological, cultural and spiritual sites identified and protected 12. Extent to which tenure and user rights of communities and indigenous peoples over publicly owned forests are recognized and practiced 13. Extent to which indigenous knowledge is used in forest management planning and implementation 14. Extent of involvement of indigenous peoples, local communities and other forest dwellers in forest management capacity-building, consultation processes, decision-making and implementation		

Sustainable Forestry Initiative SFI (forest)

General characteristics:	
Status:	In implementation
Geographical coverage:	North America: The SFI Standard applies to the United States and Canada
Scope:	All forest types in North America (focus on industrial forest lands)
Initiator system:	Developed by AF&PA (American Forest and Paper Association). Later SFI is established as an independent organization in 2000.

Short summary system or initiative:	Extension system:	
The Sustainable Forestry Initiative® (SFI) program is a comprehensive system of principles, objectives and performance measures for Sustainable Forestry Management in the US and in Canada.	Principles included:	
	Criteria included:	
	Indicators included:	
Context:		
Program Participants must comply with numerous federal, provincial, state, and local laws. The SFI Program does not try to duplicate sustainable forestry processes that are already mandatory in the United States and Canada as both countries have mature legal systems. Given the wide range of due process and compliance mechanisms that ensure conformance with applicable laws, the SFI Standard purposefully focuses on continual improvement of the practice of sustainable forestry, forest productivity, and environmental performance processes that complement the existing legal framework [78]. The American Forest & Paper Association is a member of the PEFC Council General Assembly		
Status of system:		
The Sustainable Forestry Initiative been endorsed by the PEFC Council on 6 December 2005 [79].		
Planned activities:		

Structure system or initiative:	
Juridical basis:	Voluntary.
Participation in system:	1/3 represented by Sustainable Forestry Board. Remaining two thirds represented by broader forest community and conservation groups [9]. The scheme does not require a balanced participation in the standard setting process. However, there is an even balance of Program Participants; conservation & environmental community interests; and broader forestry community representation on the Sustainable Forestry Board. Decisions are taken as far as possible by consensus with voting where necessary [80]. Standard setting process according to ISO guide 59 [9].
Local stakeholder involvement	Consultation of stakeholders in the certification process is not required [9].
Monitoring performance:	
Chain of custody system	The SFI Program includes one label for primary producers and four others for secondary producers in addition to labels for 100% content from an SFI certified forest and mixed content with XX% content from an SFI certified forest [80]: Percentage based method and physical separation. The SFI standard has its own logo.
Level of detail CoC system:	<u>Accreditation:</u> The SFI program requires certification bodies to be accredited in order to conduct SFI certifications and issue certificates [81]. Accreditation system conforms with ISO Guide 61 [80]. <u>Auditing:</u> Certification bodies have to be accredited by the SCC or ANAB to conduct SFI certification. Audits have to be consistent with ISO 17021 and ISO 19011 [81]. CB are in conformance with one or more of ISO Guides 62, 65 and 66 [80]. According to [9], SFI allows an industrial forest company to customize the standard against it will be certified. The auditing manual [81] mentions “Program Participants, with consent of the certification body, may substitute or modify indicators to address local conditions based on a thorough analysis and adequate justification to the CB”. This means that the standard of these schemes varies on a case-by-case basis. <u>Verification:</u>

	Evidence shall be compiled by examination of operating procedures, study of materials relating to forestry practices, and on-the-ground examination of field performance, and through meetings with employees, contractors and other third parties [81]. The SFI Standard requires surveillance audits to be normally conducted annually, but with intervals not exceeding 18 months. Standard recertification audit of organizations, against all of the SFI Standard objectives, performance measures and indicators is required every five years [82]. CoC requires record keeping, documentation and (internal) inspection controls.

Further information on:	
Removal of trade barriers	
Costs:	

Program participants shall have a written policy to meet the principles. The Principles are translated into 13 Objectives (with related criteria and indicators) [78]:

- SFIS objectives 1–7 provide measures for evaluating Program Participants' compliance with the SFI Standard on forestlands they own or control through long-term leases.
- SFIS objective 8 provides measures for evaluating Program Participants' compliance with the SFI Standard through their procurement programs.
- SFIS objectives 9–13 provide measures for evaluating all Program Participants' compliance with the SFI
- Standard for research, training, legal compliance, public and landowner involvement, management review, and continual improvement.

List of principles included [78]:	
1	Sustainable Forestry: To practice sustainable forestry to meet the needs of the present without compromising the ability of future generations to meet their own needs by practicing a land stewardship ethic that integrates reforestation and the managing, growing, nurturing, and harvesting of trees for useful products with the conservation of soil, air and water quality, biological diversity, wildlife and aquatic habitat, recreation, and aesthetics.
2	Responsible Practices: To use and to promote among other forest landowners sustainable forestry practices that are both scientifically credible and economically, environmentally, and socially responsible.
3	Reforestation and Productive Capacity: To provide for regeneration after harvest and maintain the productive capacity of the forestland base
4	Forest Health and Productivity: To protect forests from uncharacteristic and economically or environmentally undesirable wildfire, pests, diseases, and other damaging agents and thus maintain and improve long-term forest health and productivity.
5	Long-Term Forest and Soil Productivity: To protect and maintain long-term forest and soil productivity.
6	Protection of Water Resources: To protect water bodies and riparian zones.
7	Protection of Special Sites and Biological Diversity: To manage forests and lands of special significance (biologically, geologically, historically or culturally important) in a manner that takes into account their unique qualities and to promote a diversity of wildlife habitats, forest types, and ecological /natural community types.
8	Legal Compliance: To comply with applicable federal, provincial, state, and local forestry and related environmental laws, statutes, and regulations.
9	Continual Improvement: To continually improve the practice of forest management and also to monitor measure and report performance in achieving the commitment to sustainable forestry.
List of Objectives included [78]:	
1	Objective 1: To broaden the implementation of sustainable forestry by ensuring long-term harvest levels based on the use of the best scientific information available.
2	Objective 2: To ensure long-term forest productivity and conservation of forest resources through prompt reforestation, soil conservation, afforestation, and other measures.
3	Objective 3: To protect water quality in streams, lakes, and other water bodies.
4	Objective 4. To manage the quality and distribution of wildlife habitats and contribute to the conservation of biological diversity by developing and implementing stand- and landscape-level measures that promote habitat diversity and the conservation of forest plants and animals, including aquatic fauna.
5	Objective 5. To manage the visual impact of harvesting and other forest operations.
6	Objective 6. To manage Program Participant lands that are ecologically, geologically, historically, or culturally important in a manner that recognizes their special qualities.
7	Objective 7. To promote the efficient use of forest resources.
8	Objective 8. To broaden the practice of sustainable forestry through procurement programs. • Procurement from sources within the United States and Canada (8.1–8.4 apply) • Procurement by manufacturing facilities enrolled in the SFI Program from sources outside the US and

	Canada (8.5 and 8.6 apply)
9	Objective 9. To improve forestry research, science, and technology, upon which sound forest management decisions are based.
10	Objective 10. To improve the practice of sustainable forest management by resource professionals, logging professionals, and contractors through appropriate training and education programs.
11	Objective 11. Commitment to comply with applicable federal, provincial, state, or local laws and regulations.
12	Objective 12. To broaden the practice of sustainable forestry by encouraging the public and forestry community to participate in the commitment to sustainable forestry and publicly report progress.
13	Objective 13. To promote continual improvement in the practice of sustainable forestry and monitor, measure, and report performance in achieving the commitment to sustainable forestry.

Note to Objective 11 [82]:

- The reliance on national labor laws to respect the core labour conventions for the purposes of sustainable forestry management is acceptable, in so far as national laws are adequate.
- The United States has ratified the Convention on International Trade in Endangered Species of Wild Fauna and Flora (14/01/1974).
- The US has signed the Convention on Biological Diversity (CBD - 04/06/1993) and the Kyoto Protocol (12/11/1998) but has not ratified these conventions.
- The US has not signed the Biosafety Protocol to the CBD.
- In addition, the US has ratified and/or participates in a number of other relevant international conventions and forums including the International Tropical Timber Agreement, the RAMSAR Convention, the World Heritage Convention, and the North American Agreement for Environmental Cooperation, the Montreal Process and the United Nations Forum on Forests (UNFF).

Criteria [78]:	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
1.1. Program Participants shall ensure that long-term harvest levels are sustainable and consistent with appropriate growth and-yield models and written plans.	• A long-term resource analysis to guide forest management planning at a level appropriate to the size and scale of the operation, including o a periodic or ongoing forest inventory; o a land classification system; o soils inventory and maps, where available; o access to growth-and-yield modeling capabilities; o up-to-date maps or a geographic information system (GIS); o recommended sustainable harvest levels; and o a review of no timber issues • Documentation of annual harvest trends in relation to the sustainable forest management plan. • A forest inventory system and a method to calculate growth. • Periodic updates of inventory and recalculation of planned harvests. • Documentation of forest practices (e.g., planting, fertilization, and thinning) consistent with assumptions in harvest plans.		
2.1. Program Participants shall reforest after final harvest, unless delayed for site-specific environmental or forest health considerations, through artificial regeneration within two years or two planting seasons, or by planned natural regeneration methods within five years.	• Designation of all management units for either natural or artificial regeneration. • Clear criteria to judge adequate regeneration and appropriate actions to correct under stocked areas and achieve acceptable species composition and stocking rates for both artificial and natural regeneration. • Minimized plantings of exotic tree species and research documentation that exotic tree species, planted operationally, pose minimal risk. • Protection of desirable or planned advanced natural regeneration during harvest. • Artificial reforestation programs that consider potential ecological impacts of a different species or species mix from that which was harvested.		
2.2. Program Participants shall minimize chemical use required to achieve management objectives while protecting employees, neighbors, the public, and the forest environment.	• Minimized chemical use required to achieve management objectives. • Use of least-toxic and narrowest-spectrum pesticides necessary to achieve management objectives. • Use of pesticides registered for the intended use and applied in accordance with label requirements. • Use of integrated pest management where feasible. • Supervision of forest chemical applications by state-trained or certified applicators. • Use of best management practices (BMPs) appropriate to the situation; for example, a) Notification of adjoining landowners or nearby residents concerning applications and chemicals used; b) appropriate multilingual signs or oral warnings; c) control of public road access during and immediately after applications; d) designation of streamside and other needed buffer strips; e) use of positive shutoff and minimal-drift spray valves; f) aerial application of forest chemicals parallel to buffer zones to minimize drift; g) monitoring of water quality or safeguards to ensure proper equipment use and protection of streams, lakes, and other water bodies; h) appropriate storage of chemicals; i) filing of required state reports; or j) use of methods to ensure protection of threatened and endangered species.		
2.3. Program Participants shall implement management practices to protect and maintain forest and soil productivity.	• Use of soils maps where available. • Process to identify soils vulnerable to compaction and use of appropriate methods to avoid excessive soil disturbance. • Use of erosion control measures to minimize the loss of soil and site productivity. • Post-harvest conditions conducive to maintaining site productivity (e.g., limited rutting, retained down woody debris, minimized skid trails). • Retention of vigorous trees during partial harvesting, consistent with silvicultural norms for the area. • Criteria that address harvesting and site preparation to protect soil productivity.		

	• Minimize road construction to meet management objectives efficiently.		
2.4 Program Participants shall manage so as to protect forests from damaging agents, such as environmentally or economically undesirable wildfire, pests, and diseases, to maintain and improve long-term forest health, productivity and economic viability.	• Program to protect forests from damaging agents. • Management to promote healthy and productive forest conditions to minimize susceptibility to damaging agents. • Participation in, and support of, fire and pest prevention and control programs.		
2.5. Program Participants that utilize improved planting stock, including trees derived through biotechnology, shall use sound scientific methods and follow all applicable laws and international protocols.	Program for appropriate research, testing, evaluation, and deployment of improved planting stock, including trees derived through biotechnology.		
3.1. Program Participants shall meet or exceed all applicable federal, provincial, state, and local water quality laws and meet or exceed best management practices developed under U.S. Environmental Protection Agency–approved state water quality programs or other federal, provincial, state, or local programs	• Program to implement state or provincial BMPs during all phases of management activities. • Contract provisions that specify BMP compliance. • Plans that address wet-weather events (e.g., inventory systems, wet-weather tracts, definitions of acceptable operating conditions). • Monitoring of overall BMP implementation.		
3.2 Program Participants shall have or develop, implement, and document riparian protection measures based on soil type, terrain, vegetation, and other applicable factors.	• Program addressing management and protection of streams, lakes, and other water bodies and riparian zones. • Mapping of streams, lakes, and other water bodies as specified in state or provincial BMPs and, where appropriate, identification on the ground. • Implementation of plans to manage or protect streams, lakes, and other water bodies. • Identification and protection of no forested wetlands, including bogs, fens, vernal pools, and marshes of significant size. • Where regulations or BMPs do not currently exist to protect riparian areas, use of experts to identify appropriate protection measures.		
4.1. Program Participants shall have programs to promote biological diversity at stand and landscape levels.	• Program to promote the conservation of native biological diversity, including species, wildlife habitats, and ecological or natural community types, at stand and landscape levels. • Program to protect threatened and endangered species. • Plans to locate and protect known sites associated with viable occurrences of critically imperiled and imperiled species and communities. Plans for protection may be developed independently or collaboratively and may include e.g. Program Participant management, cooperation with other stakeholders, etc • Development and implementation of criteria, as guided by regionally appropriate science, for retention of stand-level wildlife habitat elements • Assessment, conducted individually or collaboratively, of forest cover types and habitats at the individual ownership level and, where credible data are available, across the landscape, and incorporation of findings into planning and management activities, where practical and when consistent with management objectives. • Support of and participation in plans or programs for the conservation of old-growth forests in the region of ownership. • Participation in programs and demonstration of activities as appropriate to limit the introduction, impact, and spread of invasive exotic plants and animals that directly threaten or are likely to threaten native plant and animal communities. • Program to incorporate the role of prescribed or natural fire where appropriate.		
4.2. Program Participants shall apply knowledge gained through research, science, technology, and field experience to manage wildlife habitat and contribute to the conservation of biological diversity.	• Collection of information on critically imperiled and imperiled species and communities and other biodiversity-related data through forest inventory processes, mapping, or participation in external programs, such as Nature Serve, state or provincial heritage programs, etc. Such participation may include providing nonproprietary scientific information, time, etc • A methodology to incorporate research results and field applications of biodiversity and ecosystem research into forest management decisions.		
Performance Measure 5.1. Program Participants shall	• Program to address visual quality management.		

manage the impact of harvesting on visual quality.	• Incorporation of aesthetic considerations in harvesting, road, landing design and management, and other management activities where visual impacts are a concern.		
5.2. Program Participants shall manage the size, shape, and placement of clear-cut harvests.	• Average size of clear-cut harvest areas does not exceed 120 acres, except when necessary to respond to forest health emergencies or other natural catastrophes. • Documentation through internal records of clear-cut size and the process for calculating average size.		
5.3. Program Participants shall adopt a green-up requirement or alternative methods that provide for visual quality.	• Program implementing the green-up requirement or alternative methods. • Harvest area tracking system to demonstrate compliance with the green-up requirement or alternative methods. • Trees in clear cut harvest areas are at least 3 years old or 5 feet high at the desired level of stocking before adjacent areas are clear cut, or as appropriate to address operational and economic considerations, alternative methods to reach the performance measure are utilized by the Program Participant.		
6.1. Program Participants shall identify special sites and manage them in a manner appropriate for their unique features.	• Use of existing natural heritage data and expert advice in identifying or selecting sites for protection because of their ecologically, geologically, historically, or culturally important qualities. • Appropriate mapping, cataloging, and management of identified special sites.		
7.1. Program Participants shall employ appropriate forest harvesting technology and "in-woods" manufacturing processes and practices to minimize waste and ensure efficient utilization of harvested trees, where consistent with other SFI Standard objectives.	• Program or monitoring system to ensure efficient utilization, which may include provisions to ensure a) landings left clean with little waste; b) residues distributed to add organic and nutrient value to future forests; c) merchandizing of harvested material to ensure use for its most beneficial purpose; d) development of markets for underutilized species and low-grade wood; e) exploration of alternative markets (e.g., energy markets), etc		
8.1. Program Participants shall encourage landowners to reforest following harvest, to use BMPs, and to identify and protect important habitat elements for wildlife, including critically imperiled and imperiled species and communities *(for inside US / Canada)*.	• Program to supply regionally appropriate information or services to forest landowners, describing the importance and providing implementation guidance on a. BMPs; b. reforestation; c. visual quality management; and conservation of critical wildlife habitat elements, threatened and endangered species, and critically imperiled and imperiled species and communities.		
8.2. Program Participants shall encourage landowners to utilize the services of qualified resource professionals and qualified logging professionals in applying principles of sustainable forest management on their lands *(for inside US / Canada)*.	• Program to promote the use of qualified resource professionals and qualified logging professionals. • List of qualified logging professionals maintained by Program Participant, state agency, loggers' association, or other organization.		
8.3. Program Participants shall clearly define and implement policies to ensure that mill inventories and procurement activities do not compromise adherence to the principles of sustainable forestry *(for inside US / Canada)*.	• Program for the purchase of raw material from qualified logging professionals, wood producers, and other wood suppliers. • Program to ensure that harvests of purchased stumpage comply with BMPs. • Program to address adverse weather conditions.		
8.4. Program Participants shall monitor the effectiveness of efforts to promote reforestation and BMPs, using public or private sources of information *(for inside US / Canada)*.	• verifiable monitoring system to a. evaluate the results of promoting reforestation across the wood and fiber supply area; b. monitor the use of BMPs by wood producers supplying the Program Participant; and c. evaluate the results of promotion and use of BMPs across the wood and fiber supply area. • Use of information from the verifiable monitoring system to set goals to improve, over time, rates of BMP compliance.		
8.5 Program Participants shall ensure that their procurement programs support the principles of sustainable forestry, including efforts to thwart illegal logging and promote conservation of biological diversity *(for outside US / Canada)*.	• Process to assess the risk that Program Participant's procurement program could acquire material from illegal logging. This process may include relying on the adequacy of legal protections in the US and Canada, where laws against domestic illegal logging are enforced. • Program to address any significant risk identified under 8.5.1. • Procurement from areas outside the US and Canada promotes conservation of biodiversity hotspots and major tropical wilderness areas. • Program with direct suppliers to promote the principles of sustainable forestry. • Knowledge about direct suppliers' application of the principles of sustainable forestry.		

8.6. Program Participants shall encourage economically, environmentally, and socially sound practices *(for outside US / Canada)*.	• Process to assess the risk that the Program Participant's procurement takes place in • countries without effective laws addressing the following: o workers' health and safety; o fair labor practices; o indigenous peoples' rights; o antidiscrimination and anti-harassment measures; o prevailing wages; and o Workers' right to organize. • This process may include relying on the adequacy of legal protections in countries, such as exist in the United States and Canada, where laws are effective because they are in place, are enforced for wood and fiber originating in those countries, and independent legal processes are available in the case of disputes. • Program to address any significant risk identified under 8.6.1.		
9.1 Program Participants shall individually, through cooperative efforts, or through associations provide in-kind support or funding, in addition to that generated through taxes, for forest research to improve the health, productivity, and management of forest resources.	• Current financial or in-kind support of research to address questions of relevance in the region of operations. The research will include some or all of the following issues: o forest health, productivity, and ecosystem functions; o chemical efficiency, use rate, and integrated pest management; o water quality; o wildlife management at stand or landscape levels; o conservation of biological diversity; and effectiveness of BMPs.		
9.2. Program Participants shall individually, through cooperative efforts, or through associations develop or use state, provincial, or regional analyses in support of their sustainable forestry programs.	• Participation, individually or through cooperative efforts or associations at the state, provincial, or regional level, in the development or use of a. regeneration assessments; b. growth-and-drain assessments; c. BMP implementation and compliance; and d. biodiversity conservation information for family forest owners		
10.1. Program Participants shall require appropriate training of personnel and contractors so that they are competent to fulfill their responsibilities under the SFI Standard.	• Written statement of commitment to the SFI Standard communicated throughout the organization, particularly to mill and woodland managers, wood procurement staff, etc • Assignment and understanding of roles and responsibilities for achieving SFI Standard objectives. • Staff education and training sufficient to their roles and responsibilities. • Contractor education and training sufficient to their roles and responsibilities.		
10.2. Program Participants shall work closely with state logging or forestry associations, or appropriate agencies or others in the forestry community, to foster improvement in the professionalism of wood producers.	• Participation in or support of SFI Implementation Committees to establish criteria and identify delivery mechanisms for wood producers' training courses that address e.g. - awareness of sustainable forestry principles and the SFI Program; - awareness of responsibilities under the U.S. Endangered Species Act, the Canadian Species at Risk Act, and other measures to protect wildlife habitat; - U.S. Occupational Safety and Health Administration regulations, wage and hour		
11.1. Program Participants shall take appropriate steps to comply with applicable federal, provincial, state, and local forestry and related environmental laws and regulations.	• Access to relevant laws and regulations in appropriate locations. • System to achieve compliance with federal, provincial, state, local laws and regulations. • Demonstration of commitment to legal compliance through available regulatory action information. • Adherence to all applicable federal, state, and provincial regulations and international protocols for research and deployment of trees derived from improved planting stock and biotechnology.		
11.2. Program Participants shall take appropriate steps to comply with all applicable social laws at the federal, provincial, state, and local levels in the country in which the Program Participant operates.	• Written policy demonstrating commitment to comply with social laws, such as those covering civil rights, equal employment opportunities, antidiscrimination and anti-harassment measures, workers' compensation, indigenous peoples' rights, workers' and communities' right to know, prevailing wages, workers' right to organize, and occupational health and safety.		
12.1. Program Participants shall support and promote efforts by consulting foresters, state and federal agencies, state or local groups, professional societies, and the	Support for efforts of SFI Implementation Committees. Support for the development and distribution of educational materials, including information packets for use with forest landowners.		

American Tree Farm System® and other landowner cooperative programs to apply principles of SFM	3. Support for the development and distribution of regional or statewide information materials that provide landowners with practical approaches for addressing biological diversity issues, such as e.g. specific wildlife habitat, critically imperiled or imperiled species, etc 4. Participation in efforts to support or promote conservation of working forests through voluntary market-based incentive programs (e.g., current-use taxation programs, Forest Legacy, etc) 5. Program Participants are knowledgeable about credible regional conservation planning and priority-setting efforts that include a broad range of stakeholders. Consider the results of these efforts in planning where practical and consistent with management objectives.		
12.2 Program Participants shall support and promote, at the state, provincial or other appropriate levels, mechanisms for public outreach, education, and involvement related to forest management.	• Support for the SFI Implementation Committee program to address outreach, education, and technical assistance (e.g., toll-free numbers, public sector technical assistance programs). • Periodic educational opportunities promoting sustainable forestry, such as a. field tours, seminars, or workshops; b. educational trips; c. self-guided forest management trails; etc • Recreation opportunities for the public, where consistent with forest management objectives.		
12.3. Program Participants with forest management responsibilities on public lands shall participate in the development of public land planning and management processes.	• Involvement in public land planning and management activities with appropriate governmental entities and the public. • Appropriate contact with local stakeholders over forest management issues through state, provincial, federal, or independent collaboration.		
12.4. Program Participants with forest management responsibilities on public lands shall confer with affected indigenous peoples.	Program that includes communicating with affected indigenous peoples to enable Program Participants to • understand and respect traditional forest related knowledge; • identify and protect spiritually, historically, or culturally important sites; and • Address the sustainable use of no timber forest products of value to indigenous peoples in areas where Program Participants have management responsibilities on public lands.		
12.5. Program Participants shall establish, at the state, provincial, or other appropriate levels, procedures to address concerns raised by loggers, consulting foresters, employees, the public, or Program Participants regarding practices that appear inconsistent with the SFI Standard principles and objectives.	• Support for SFI Implementation Committee efforts (toll-free numbers and other efforts) to address concerns about apparent nonconforming practices. • Process to receive and respond to public inquiries.		
12.6. Program Participants shall report annually to the SFI Program on their compliance with the SFI Standard.	• Prompt response to the SFI annual progress report. • Recordkeeping for all the categories of information needed for SFI annual progress reports. • Maintenance of copies of past reports to document progress and improvements to demonstrate conformance to the SFI Standard.		
13.1. Program Participants shall establish a management review system to examine findings and progress in implementing the SFI Standard, to make appropriate improvements in programs, and to inform their employees of changes.	• System to review commitments, programs, and procedures to evaluate effectiveness. • System for collecting, reviewing, and reporting information to management regarding progress in achieving SFI Standard objectives and performance measures. • Annual review of progress by management and determination of changes and improvements necessary to continually improve SFI conformance.		

ATFS - American Tree Farm System (forest)

General characteristics:	
Status:	In implementation
Geographical coverage:	USA
Scope:	Forestry (focus on non-industrial lands)
Initiator system:	The American Tree Farm System (ATFS), was established in 1941 as a program of the American Forests Foundation (AFF) throughout the USA [83].

Short summary system or initiative:	Extension system:	
The ATFS is a program of the American Forest Foundation. The primary mission of the ATFS is to promote outreach and education of non-managing forest owners, to provide family forest owners low cost access to the certified wood fiber market and to increase public understanding of all benefits of productive forestry [84].	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Y
Context:		
It is noted that the USA has two complementary certification schemes. ATFS focuses on certification of non-industrial forest lands. Sustainable Forest Initiatives (SFI), an alternative certification scheme, focuses on certification of industrial forest lands [83].		
Status of system:		
The ATFS scheme was endorsed as meeting the PEFC Council requirements on 7th August 2008 [79]. The ATFS currently certifies non-industrial forested properties of at least 10 acres and less than 10,000 acres. In 2008, 90,000 properties are certified under ATFS, covering approximately 9.4 million hectares of primarily family owned forest land, and representing 10% of the privately held, non-industrial forests in USA [83].		
Planned activities:		
-		

Structure system or initiative:	
Juridical basis:	Voluntary
Participation in system:	The standard setting body is an Independent Standards Review Panel (ISRP), consisting of stakeholders in ATFS and family-owned tree farming in the USA. Standards are revised within a framework developed by AFF Board of Trustees. ISRP consisted of 11 representatives from family owned forests, public agencies, academia, environmental NGOs, and the forest industry. Panel consensus has to be reached [83]. Standard setting process conform ISO 59 [84].
Local stakeholder involvement	
Monitoring performance:	
Chain of custody system	ATFS has adopted the PEFC Council Annex 4 (Chain of Custody for Forest Based Products Requirements) as an option for owners of ATFS certified forests interested in implementing a chain of custody standard [83]. Forest owners covered by ATFS certification may use the PEFC logo, limited to off product use. ATFS does not provide on-product labels, and no PEFC labeling option is sought for endorsement [83]. No own product label.
Level of detail CoC system:	<u>Accreditation:</u> At present no system to accredit certification bodies in accordance with ISO Guides has been implemented [84]. AFF engaged the ANSI-ASQ National Accreditation Board (ANAB) to develop an accreditation program for certification of forest management by independent, qualified, third-party certification bodies. The accreditation program developed by ANAB is currently available in draft form and will require formal endorsement by ANAB and AFF [83]. <u>Auditing:</u> Certification bodies for ATFS must meet the requirements of ISO 19011 [83]. At present assessment is not carried out by certification bodies in accordance with the ISO Guides 62 or 66, but by professionally qualified foresters that make no charge to the landowner for inspection [84]. PEFCC Annex 4 (for CoC) requires

	certification bodies to follow ISO Guide 65. Verification: Standards and performance requirements for CoC certification are based on the requirements of PEFCC Annex 4. Audit evidence to determine the conformity with the forest management standard shall include relevant information from external parties [83]. Field verification and control of documentation is required as well [84]. It is foreseen (procedures are currently revised) that the standard will be reviewed at least every 5 years. Maximum period for surveillance audits is one year [83].

Further information on:	
Removal of trade barriers	
Costs:	

List of principles included [85]:	
1	Standard 1: Ensuring Sustainable Forests > The AFF Standards of Sustainability promote the growing of renewable forest resources on private lands while protecting environmental benefits and increasing public understanding of all benefits of productive forestry.
2	Standard 2: Compliance With Laws > Forest management complies with all relevant federal, state and local regulations and ordinances.
3	Standard 3: Commitment to Practicing Sustainable Forestry > Forest owners demonstrate their commitment to sustainability by developing and implementing a long-term forest management plan
4	Standard 4: Reforestation > Forest owners provide timely restocking of desirable species of trees, compatible with regional ecosystems on harvested areas and idle areas where tree-growing is the land use objective.
5	Standard 5: Air, Water and Soil Protection > Forestry practices maintain or enhance the environment, including air, water, soil, and site quality.
6	Standard 6: Fish, Wildlife and Biodiversity: Forest management activities contribute to the conservation of biodiversity and maintain or enhance habitat for native fish, wildlife, and plant species, with emphasis on natural plant and animal communities and rare plants and animals.
7	Standard 7: Forest Aesthetics > Forest management practices minimize negative visual impacts of forest activities.
8	Standard 8: Protect Special Sites > Special sites are managed in a way that recognizes their unique characteristics.
9	Standard 9: Wood Fiber Harvest and Other Operations > Wood fiber harvests and other forest operations are conducted in accordance with the management plan and with sensitivity to other forest values (e.g., water quality, regeneration, wildlife habitat, biodiversity, special sites, etc.).

Criteria [85]:	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
1.1 Qualified forest owners must comply with AFF Standards of Sustainability. American Tree Farm System (ATFS) volunteer network of accredited, qualified natural resource managers will conduct field verification of landowner conformance.	• An accredited Tree Farm Inspector must inspect qualified properties to assure conformance with AFF's Standards of Sustainability. • Tree Farm Inspectors will audit certified properties every five years. Properties that fail to meet AFF's Standards and guidelines will be decertified. [Landowners may seek review of decertification decisions through ATFS's formal dispute resolution process.]		
2.1 Forest owners must comply with all relevant federal, state, county, and municipal laws and regulations.	• Landowner affirms that he/she complies with all relevant laws and regulations, and that he/she will correct conditions that led to adverse regulatory actions, if any. • Landowner obtains advice from forestry consultants, public agency natural resource managers, or contractors who are trained in, and familiar with, applicable laws, regulations and published Best Management Practices for forestry.		
3.1 Forest owners must have a written forest management plan consistent with the scale of forestry operations of the property.	• Management plans include ao: type of ownership; owners goals appropriate to the management objectives; tract map noting stands and conditions, important features including special sites, and management recommendations that address wood and fiber production, wildlife habitat, owner-designated fish, wildlife and plant species if desired, environmental quality, etc • Management plan is active, adaptive, and embodies the owners' current objectives, remains appropriate for the land certified, and reflects the current state of knowledge about forestry and natural resource management.		
3.2 Forest owners assure management activities are conducted in accordance with the management plan.	• On-site visit, interviews, and records confirm management activities are being conducted in accordance with the plan.		
4.1 Land must be reforested with natural seeding, sprouting, direct seeding, or reforestation with tree seedlings.	• Harvested forest land must achieve satisfactory stocking levels reflecting the forest owner's management objectives, within five years after harvest, or within a time interval as specified by applicable regulation, whichever is shorter.		
5.1 Forest owners must adhere to State Forestry Best Management Practices (BMPs) and comply with all relevant forest practices act(s) and ordinances.	• Landowner affirms that he/she complies with all relevant laws and regulations, and that he/she will remedy or has remedied any conditions that led to adverse regulatory actions, if any. • Landowner must minimize disturbances within riparian zones. • On-site visit confirms that landowner is conducting management activities in accordance with BMPs and all relevant forest practices act[s] and ordinances.		State Forestry Best Management Practices (BMP)
5.2 Application of forest chemicals must not exceed the levels necessary to achieve specific management objectives.	• Chemicals are applied only when necessary to meet specific management objectives. • Management plans consider integrated pest management as a preferred means of controlling insect pests, pathogens, and vegetative competition. • Chemicals are applied in accordance with EPA-approved labels and meet or exceed all human health and environmental safety requirements on the label, and in local, state, and federal law.		Chemicals: EPA-approved labels
5.3 Where prescribed fire is used, the forest owner must plan appropriately for its application.	• Landowner affirms that if and when prescribed fire is used, it is conducted in accordance with the owner's management plan and with state and local laws and regulations. • On-site visit confirms prescribed fires, if used, were conducted in accordance with the management plan and applicable laws and regulations.		
6.1 Landowners are encouraged to confer with their local natural resource agencies, state natural resource heritage programs, or other knowledgeable sources about rare species or species of concern that occur on their property.	• Where practicable, management plans consider and address opportunities to protect rare species and special habitat features. • The forest owner or forester responsible for developing the owner's management plan has made a reasonable effort to locate and secure information that denotes the location of rare species or species of concern. Appropriate sources of information include, but are not limited to county, state and federal agencies, university and extension programs and local knowledge.		
6.2 Forest management activities must maintain or enhance habitat for owner's designated fish, wildlife, and plant species as identified in the management plan.	• Forest management activities must maintain or improve habitat for owner's target game and non-game fish and wildlife species.		
7.1 Landowners must manage their forest with concern for visual impacts, in a manner consistent with size and scale of their forestry operations.	• On tracts of significant visual exposure, management plans and forest operations may include: roadside buffers, access entry "dog-legs," limited harvests in certain areas, and adaptation of other visual management techniques.		

8.1 Forest management practices must recognize historical, biological, archaeological, cultural, and geological sites of special interest.	• Management plan and forest operations identify and manage for special sites in a manner consistent with forest owner's objectives, the unique features of the site, and the size and scale of the property. • The forest owner or forester responsible for developing the owner's management plan must make a reasonable effort to locate and secure information that denotes the location of special faunal and floral communities. Appropriate sources of information include, but are not limited to county, state and federal agencies, university and extension programs and local knowledge.		
9.1 Landowners must comply with the management plan described in Standard Three (3).			
9.2 Landowners must adhere to all national, state, and local laws and regulations applicable to forest management when conducting forest operations.	• In selecting contractors, landowners seek loggers, foresters, and other forest management contractors who have completed recommended training and education programs offered in their respective states. • Loggers and contractors conducting wood fiber harvests and other forest management operations carry required Workers Compensation and general liability insurance		

Canadian Standards Association CSA (forest)

General characteristics:	
Status:	In implementation
Geographical coverage:	Canada
Scope:	Forestry products
Initiator system:	In 1993 by the Canadian Pulp and Paper Association. CSA is an independent, NGO accredited by government of Canada [9].

Short summary system or initiative:	Extension system:	
The CAN/CSA-Z809 SFM Standard is based on the international Helsinki and Montréal processes. It incorporates Canada's own national SFM criteria, as well as requiring the development of locally adapted indicators through a public consultation process [86].	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Y (developed in public participation process)
Context:		
Use of the CCFM SFM criteria and elements as a framework for value identification provides vital links between local level SFM and national- and provincial-scale forest policy, as well as a strong measure of consistency in identification of local forest values across Canada [87].		
Status of system:		
The CSA forest certification Program was endorsed by the PEFC Council as meeting the PEFC Council requirements on 22 March 2005 [79]. As of June 2007, about 59%, or 79.3 million hectares out of 134.1 million hectares of certified Canadian forests had been certified under the CAN/CSA-Z809 SFM Standard.		
Planned activities:		
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Structure system or initiative:	
Juridical basis:	Voluntary
Participation in system:	The scheme does require participation in the standard setting process [9]. The Standard requires organizations to seek comprehensive, continuing public participation [87]. The CSA SFM TC has four voting categories with minimum and maximum members in each category: 6-8 for Producer/Industry, 6-10 for Academics/Consultants, 6-8 for Environmental & General Interest, and 6-8 for Government/Regulatory. In addition the committee may have a number of associate members [88].
Local stakeholder involvement	The Standard requires a public participation process to set locally appropriate targets (including thresholds and limits). Moreover, this Standard sets specific requirements for the public participation process. This approach to performance not only respects government-recognized criteria for SFM but also allows the public to participate in the interpretation of the CCFM SFM criteria and CSA SFM elements for the local forest [87].
Monitoring performance:	
Chain of custody system	The CSA scheme uses the PEFC International Chain of Custody standard (Annex 4 of the PEFC Technical Document) for the purposes of chain of custody certification [79]. PEFC prescribes the physical separation and percentage based separation method [70].
Level of detail CoC system:	CSA International's Forest Products Group is responsible for the management and delivery of the Forest Products Marking program and for assuring the integrity of the CSA SFM Mark [88]. Accreditation: Standard setting process conform ISO Guide 59. Certification body and CoC-Certification body conform ISO guide 62, 65, 66 [9]. CoC- Accreditation body and Accreditation body conform ISO guide 61 [9]. Audits to this Standard are done by accredited certifiers and certified auditors who are independent of the standards-writing body (CSA) [87]. Verification: In addition to the initial audit, there are mandatory annual reviews, which include both a document review and on-site checks of the forest to ensure progress is being made towards the achievement of targets and that the SFM

	requirements are being upheld. In addition, a full re-certification audit is required periodically following the initial certification, in accordance with the requirements of the Standards Council of Canada. There is a review of the standard every 5 years [87]. According to [9], CSA allows an industrial forest company to customize the standard against it will be certified. This means that the standard of these schemes varies on a case-by-case basis.

Further information on:	
Removal of trade barriers	
Costs:	

The Standard deals with performance at two levels. First, it prescribes use of a mandatory set of CCFM SFM criteria and CSA SFM elements. Second, it gives the public the opportunity to assist in setting specific values, objectives, indicators, and targets at the local forest level for each of the CSA SFM elements. The concept of continual improvement in SFM is included [87].

List of principles included:	
1	General requirements
2	Required activities
3	Public participation requirements and interested parties
4	Process requirements
5	Guiding principles of consensus processes
6	Communication
7	CCFM criterion 1: Conservation of Biological Diversity: Conserve biological diversity by maintaining integrity, function, and diversity of living organisms and the complexes of which they are part.
8	Criterion 2 — Maintenance and Enhancement of Forest Ecosystem Condition and Productivity: Conserve forest ecosystem condition and productivity by maintaining the health, vitality, and rates of biological production
9	CCFM Criterion 3 — Conservation of Soil and Water Resources: Conserve soil and water resources by maintaining their quantity and quality in forest ecosystems.
10	CCFM Criterion 4 — Forest Ecosystem Contributions to Global Ecological Cycles: Maintain forest conditions and management activities that contribute to the health of global ecological cycles.
11	CCFM Criterion 5 — Multiple Benefits to Society: Sustain flows of forest benefits for current and future generations by providing multiple goods and services.
12	CCFM Criterion 6 — Accepting Society's Responsibility for Sustainable Development: Society's responsibility for sustainable forest management requires that fair, equitable, and effective forest management decisions are made.
13	SFM System Requirements: The Continual Improvement Loop

Criteria [87]:	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
1a. The organization shall meet the SFM requirements of this Standard, which include but are not limited to a) compliance with relevant legislation on the DFA; b) appropriate values, objectives, indicators, and targets that clearly address the CCFM SFM criteria and CSA SFM elements in this Standard; c) ongoing and meaningful public participation; d) progress towards or achievement of performance targets; and e) Continual improvement in performance.			
2a. To meet all the SFM requirements of this Standard, the organization shall meet the a) a) public participation requirements, b) performance requirements and c) system requirements.			
2b. The SFM system requirements are based on the principle of adaptive management, which enables and encourages the improvement of management actions and practices based on knowledge gained from experience.			
2c. Continual improvement			
3a. The organization shall establish and implement a public participation process by either a) starting a new process; b) building on an existing process; or c) reviving a previous process.			
3b. The organization shall: a) openly seek representation from a broad range of interested parties, including DFA-related workers, and invite them to participate in developing the public participation process; b) provide interested parties with relevant background information; c) demonstrate through documentation that efforts were made to contact Aboriginal forest users and communities affected by or interested in forest management in the DFA; d) demonstrate through documentation that efforts were made to encourage Aboriginal forest users and communities to become involved in identifying and addressing SFM values; e) recognize Aboriginal and treaty rights and agree that Aboriginal participation in the public participation process will not prejudice those rights; f) Establish and maintain a list of interested parties, including those that chose to participate, those that decided not to participate, and those that were unable to participate.	F: The list shall contain names and contact information, as well as any links to the organization.		
4a. The organization shall demonstrate that a) the public participation process works according to clearly defined operating rules; b) The participants have agreed to the public participation process operating rules. c) The operating rules need to specify the range of considerations and issues to be addressed in the process. d) The aims or purposes for the public participation process need to be defined. The goals should address the expectations of the interested parties that have chosen to participate. e) The operating rules need to specify the expected duration of various stages of the process, including delivery dates for key outcomes. f) Provisions for Internal and External Communication g) Effective public participation requires resources for effective and efficient implementation. The operating rules need to specify the resources that will be made available to the process, by which parties, and under what conditions. h) The expectations on the part of both the participants and the organization should be clear at the outset and throughout the public participation process. i) The public participation process needs to have a system to deal with conflicts of interest, particularly when participants have relationships with the organization or any other party that must be declared. j) For effective engagement, participants need to know how meetings will be conducted and decisions made. k) The operating rules should clarify which participants in the process have the authority to decide on specific matters.	Rules that contain provisions on i) content; ii) goals; iii) timelines; iv) internal and external communication; v) resources (including human, physical, financial, information, and technological, as necessary and reasonable); vi) roles, responsibilities, and obligations of participants and their organizations; vii) conflict of interest; viii) decision-making methods; ix) authority for decisions; x) mechanisms to adjust the process as needed; xi) access to information (including this Standard); xii) the participation of experts, other interests, and government; and xiii) a dispute-resolution mechanism;		

l) A Mechanism to Adjust the Process should exist m) Access to Information is required n) The Participation of Experts, Other Interests, and Government o) Dispute-resolution mechanism			
5a. In the public participation process, interested parties shall have opportunities to work with the Organization. The organization and the public participation process shall ensure that the values, objectives, indicators, and targets are consistent with relevant government legislation, regulations, and policies.	to i) identify and select values, objectives, indicators and targets, based on CSA SFM elements and any other elements of relevance to DFA; ii) develop alternative strategies to be assessed; iii) assess alternative strategies and select the preferred one; iv) review the SFM plan; v) design monitoring programs, evaluate results, and recommend improvements; vi) discuss and resolve any issues relevant to SFM in the DFA;		
6a. The organization shall: a) provide access to information about the DFA and the SFM requirements; b) provide information to a broader public about the progress being made in the implementation of this Standard; c) make allowances for different linguistic, cultural, geographic, or informational needs of interested parties; d) demonstrate that there is ongoing public communication about the DFA, including the public participation process; and e) Demonstrate that all input is considered, and responses are provided.			
7a. CSA SFM Element 1.1 Ecosystem Diversity: Conserve ecosystem diversity at the landscape level by maintaining the variety of communities and ecosystems that naturally occur in the DFA. 7b. CSA SFM Element 1.2 Species Diversity: Conserve species diversity by ensuring that habitats for the native species found in the DFA are maintained through time. 7c. CSA SFM Element 1.3 Genetic Diversity: Conserve genetic diversity by maintaining the variation of genes within species. 7d. CSA SFM Element 1.4 Protected Areas and Sites of Special Biological Significance: Respect protected areas identified through government processes. Identify sites of special biological significance within the DFA and implement management strategies appropriate to their long-term maintenance.	An inventory or map of sites of biological significance within the DFA should be made. The sites should include critical areas for wildlife habitat, sensitive sites, and unusual or rare forest conditions, as established according to scientific and traditional criteria.		
8a. CSA SFM Element 2.1 Forest Ecosystem Resilience: Conserve ecosystem resilience by maintaining both ecosystem processes and ecosystem conditions. 8b. CSA SFM Element 2.2 Forest Ecosystem Productivity: Conserve forest ecosystem productivity and productive capacity by maintaining ecosystem conditions that are capable of supporting naturally occurring species.			
9a. CSA SFM Element 3.1 Soil Quality and Quantity: Conserve soil resources by maintaining soil quality and quantity. 9b. CSA SFM Element 3.2 Water Quality and Quantity: Conserve water resources by maintaining water quality and quantity.			
10a. CSA SFM Element 4.1 Carbon Uptake and Storage: Maintain the processes that take carbon from the atmosphere and store it in forest ecosystems. 10b. CSA SFM Element 4.2 Forest Land Conversion: Protect forestlands from deforestation or conversion to non-forests.	Forest carbon has recently become a key SFM value, especially in view of Canada's international commitment to lower its net carbon outputs to the atmosphere.		
11a. CSA SFM Element 5.1 Timber and Non-Timber Benefits: Manage the forest sustainably to produce an acceptable and feasible mix of both timber and non-timber benefits. 11b. CSA SFM Element 5.2 Communities and Sustainability: Contribute to the sustainability of communities by providing diverse opportunities to derive benefits from forests and to participate in their use and management. 11c. CSA SFM Element 5.3 Fair Distribution of Benefits and Costs: Promote the fair distribution of timber and non-timber benefits and costs.	a) timber and non-timber benefits, including: outdoor activities, both in terms of quality and quantity; sustainable harvest of timber and non-timber resources; maintenance of economically viable hunting, fishing, and trapping activities; opportunities for ecotourism; and protection and development of cultural and heritage resources; b) communities and sustainability, including diversification of industry; and opportunities for employment;		

	c) fair distribution of benefits and costs, including fair and reasonable wages for DFA-related workers, as established by prevailing industry collective agreements or market wage rates; fair return on investment to the organization and to DFA contractors; local taxation as determined by applicable assessment and appeal procedures; revenues to the Crown and other landlords as determined by applicable stumpage or market rates; cost-sharing of activities; sharing of the economic, social, environmental, and health risks; and educational opportunities for DFA-related workers.		
12a. CSA SFM Element 6.1 Aboriginal and Treaty Rights: Recognize and respect Aboriginal and treaty rights. 12b. CSA SFM Element 6.2 Respect for Aboriginal Forest Values, Knowledge, and Uses: Respect traditional Aboriginal forest values and uses identified through the Aboriginal input process. 12c. CSA SFM Element 6.3 Public Participation: Demonstrate that the SFM public participation process is designed and functioning to the satisfaction of the participants. 12d. CSA SFM Element 6.4 Information for Decision-Making: Provide relevant information to interested parties to support their involvement in the public participation process, and increase knowledge of ecosystem processes and human interactions with forest ecosystems.			
13a. The organization shall establish and maintain an SFM system 13b. SFM Policy: The top management shall define and maintain the organization's SFM commitment through policy statements and/or other documented public statements. 13c. Planning: The organization shall designate a clearly defined forest area to which this Standard applies. The organization shall define the geographic extent and the respective ownership and management responsibilities for the DFA. The organization shall respect the legal rights and responsibilities of other parties in the DFA that are not part of the registration applicant. This also includes information on: • Shared responsibilities, • Rights and regulations. • Incorporation of Public Participation Requirements: The public participation requirements set out in Clause 5 of this Standard shall be incorporated into the SFM system. • Setting DFA-Specific Performance Requirements: The organization shall with public participation establish DFA-specific performance requirements that address all the CSA SFM elements • The organization shall document, maintain, and make publicly available an SFM plan for the DFA. The SFM plan for each DFA shall include (a.o.) a comprehensive description of the DFA; a summary of the most recent forest management plan and the management outcomes, including a statement of values, objectives, indicators, and targets; d) current status and forecasts for each indicator, including a description of the assumptions and • analytical methods used for forecasting; a description of the chosen strategy, including all significant actions to be undertaken and their associated implementation schedule; 13d. Implementation and strategy including: • Structure and responsibility • Training, awareness and knowledge • Communication • SFM documentation • Operation procedures and controls • Emergency preparedness and response 13e. Checking and corrective action including: • Corrective and preventive action • Records • Internal audits and management review	13b. The statement(s) shall contain a commitment to a) achieve and maintain SFM; b) meet or exceed all relevant legislation, regulations, policies, and other requirements to which the organization subscribes; c) respect Aboriginal and treaty rights; d) provide for public participation; e) provide participation opportunities for Aboriginal peoples with respect to their rights and interests in SFM; f) provide conditions and safeguards for the health and safety of DFA-related workers and the public; g) improve knowledge about the forest and SFM and to monitor advances in SFM science and technology and incorporate them where applicable; and h) Demonstrate continual improvement in SFM. The statement(s) shall be documented, communicated, and made readily available. 13d. The organization shall establish and maintain procedures for annual internal audits to ensure that it conforms to the SFM requirements set out in this Standard; and provide information on the results of these internal audits to top management.		

CERFLOR Scheme - Brazil (forest)

General characteristics:	
Status:	In implementation
Geographical coverage:	Brazil
Scope:	Consisting of a) Forest Management Certification for planted and native forests; b) a Chain of Custody Standard for tracking certified wood products through the supply chain [89]
Initiator system:	The concept of Cerflor was promulgated in 1991 by the Brazilian Silviculture Society (SBS) as a voluntary program for sustainable forest management certification. Cerflor was formally launched in August 2002, as the official Brazilian program for forest certification and included in the Brazilian Conformity Assessment Scheme (SBAC). [89].

Short summary system or initiative:	Extension system:	
Cerflor is the official Brazilian program for forest certification and included in the Brazilian Conformity Assessment Scheme (SBAC).	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Y
Context:		
The legal framework for CERFLOR is contained in a range of legal documents and compatible with national forestry legislation [89]		
Status of system:		
The Cerflor - Brazilian Program of Forest Certification submitted by INMETRO was endorsed by the PEFC Council in 2005 with the condition that the CERFLOR Brazil uses the PEFC International Chain of Custody standard for the purposes of chain of custody certification [79].		
Planned activities:		

Structure system or initiative:	
Juridical basis:	Voluntary
Participation in system:	The development of the technical standards for accreditation of forest management and chain of custody certification bodies was managed by a Technical Sub-commission on Forest Management (SCTFM). The SCTFM was comprised of participants of all relevant stakeholder groups. Its work was coordinated by Inmetro [89]. On the evidence presented in the documentation by Inmetro to PEFCC, the results of interviews and responses to a questionnaire, it is the opinion of ITS Global that Cerflor meets PEFCC's requirement for broad stakeholder participation in the standard setting process [89].
Local stakeholder involvement	No stakeholder consultation is required in the certification process – mainly focused on dissemination and communication with local stakeholder groups [9]. Note: the role of indigenous people is not included in the standard.
Monitoring performance:	
Chain of custody system	The chain of custody certification system is explicitly linked to wood products produced from certified forests. Only products from wood sourced from forest management units (FMUs) certified according to forest management standards can be granted chain of custody certification. Cerflor does not provide for application of physical separation method for wood sourced from certified forests. Cerflor uses the percentage based method: a product made of certified and non-certified raw materials must have at least 70% in weight or volume of its contents certified.
Level of detail CoC system:	<u>Accreditation:</u> ABNT, the Brazilian Association for Technical Standards, is operating as the National Standard Forum. ABNT is the body responsible for the elaboration and review of Cerflor standards. ABNT conducts its work consistent with ISO standards and guidelines setting processes. ABNT is the ISO representative in Brazil [89]. Accreditation body conform ISO guide 61 [9]. Inmetro is the authority responsible for the management of Cerflor. *For CoC Accreditation:* it is assessed that Cerflor does not fully demonstrate structural independence between the chain of custody requirements (NBR 14790), and the certification and accreditation processes at a level specified by the requirements of

	PEFCC [89]. Verification: Field visits are required in the auditing process. Cerflor requires surveillance audits under the forest management standards (NBR 14789 for planted forests and NBR 15789 for native forests). It is not specified that the audits are annual. Annual audits are required under chain of custody rules. The standard itself (and validity certificates) is reviewed every (maximum) 5 years [89]. Under the CoC control standards, an organization must ensure that raw material can be tracked, identified and separated according to its origin as it moves through the production process. In addition a certified product requires a certification mark to be placed on the product on its sale or transfer. Cerflor requires an organization using chain of custody to maintain proper control records [89] Certification body: Certification body conform ISO guide 62, 65, 66 [9].

Further information on:	
Removal of trade barriers	
Costs:	

CERFLOR has principles for planted forests and for native forests.

List of principles included:	
Principles for planted forest [90]:	
1	*Legal compliance:* The forestry enterprise shall be managed by employing attitudes and actions that ensure compliance with current Federal, State and Municipal legislation. Federal law, as well as international treaties and agreements shall be disseminated to all of those involved in the process of obtaining the forest products.
2	*Rational use of forest resources over the short, medium and long term with the objective of ensuring sustainability:* Forest management shall be planned, either through the use of the services of the own organization or through 3rd parties. The organization must promote and adopt attitudes that encourage the rational use of forest resources, both with regard to raw materials produced, secondary products or services rendered by the forest. The forest shall be managed in such a way that the activity does not lead to the depletion of renewable natural resources.
3	*Care for biological diversity:* The organization shall manage the forest plantation in such way as to minimize the negative impacts of its silvicultural activity on the native flora and fauna. It shall care for the maintenance of biological diversity.
4	*Care for water, soil and air resources:* The forest management plan and the technological development program shall foresee and adopt techniques aimed at soil, water, and air resources conservation
5	*Environmental, economic and social development of regions where the forest activities are located:* The organization must have a policy of interrelating with employees and communities within the area of influence the forest management unit, and must provide evidence of the benefits of the forest activities on social, environmental and economic aspects.
Principles for native forest [91]:	
1	See principle for planted forest
2	*Rational use of forest resources in the short, medium, and long terms, in search of its sustainability:* Forest management shall be planned and executed, through the organisation's own services or by means of third parties. The organization shall show and present attitudes that lead to the sustainable use of resources and services offered by the forest
3	*Care for Biological Diversity*: The organization shall manage the forest in order to minimize the negative impacts of its activities upon the flora and fauna. It shall take care of the maintenance of the biological diversity
4	*Respect to water, soil, and air.* Forest management and technological development programmes shall foresee and adopt techniques that consider soil conservation, water and air resources
5	*Environmental, economic, and social development of the regions in which forest activity is inserted.* The organization must have a policy of interrelating with employees and communities within the area of influence the forest management unit, and must provide evidence of the benefits of the forest activities on social, environmental and economic aspects

Criteria [90, 91]:	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
Criteria for planted forest:			
1.1 - The organization must undertake the pertinent activities for establishing and managing forests in accordance with current legislation and other forest and environmental regulations applicable.	• Existence of procedures for identifying laws and other regulations that are applicable to the establishment and management of the forest management unit; • Existence of records providing evidence of compliance with laws and other regulations that is applicable to the establishment and management of the forest management unit.		
1.2 - The rights of local communities to use and occupy land with natural forests must be respected.	• evidences that the legal and traditional non-predatory rights of the local communities are being respected; • evidences that areas neighboring or contiguous to the forest management unit, where local communities are living, are identified, demarcated and respected; • existence of a land tenure or land use document which proves the demarcation of the forest management unit and which is consistent with the management plan; • Evidence that the organization acts in an effective way to solve possible conflicts or legal disputes related to land tenure or losses inflicted to third parties.		
1.3 - Labor, social security, fiscal and tax legislations shall be complied with.	• evidence that social security issues of all forest workers are in accordance with current legislation; • evidence that all aspects related to labor legislation are in accordance with current legislation, including collective agreements, collective conventions and work regulatory standards; • evidence that the organization is up to date with its fiscal and tax obligations; • evidence that measures are being taken with service providers to ensure that they are also complying with labor, tax and social security laws; • Existence of an occupational safety and health management program.		
2.1 - the organization shall adopt strategies oriented to the sustainable use and management of the forest resources.	• existence of procedures aimed at: a) identify all environmental aspects that can be controlled or influenced, along with the related, b) environmental impacts, c) identify and characterize significant environmental impacts, d) characterize, assess and establish measures to avoid or minimize negative environmental impacts on the forest management unit. • evidence that the forest species are adequate for the envisioned final uses; • evidence of adopting practices that show efficient use of produced forest resources; • evidence of adopting practices that show environmentally appropriate use of waste; • Existence of documented procedures for seedling production, tree planting, replanting, silvicultural treatments, road construction and maintenance, harvesting and transportation of forest raw material activities.		
2.2 - the forest operations shall be based on an up to date forest management plan.	• existence of a documented management plan with defined objectives, which is compatible to the scale of the enterprise, and which contains (a.o.) a) management conditions according to regional and local circumstances; b) silvicultural management scheme to be implemented; c) maps or sketches of the forest management unit with indications of land use and occupation; d) land survey data, classes and types of soils and vegetation, as well as available water resources; etc • evidence that the management plan was prepared and is being monitored by legally authorized professionals; • evidence that the multi-annual management plan is being monitored and revised; • evidence that the results of the monitoring are being incorporated into the management plan; • evidence that the management plan is being divulged to and known by forest workers and local communities, except for confidential information that might compromise competitiveness; • Evidence of the implementation of training and capacity building programs aimed at e.g. decrease of occurrences placing the integrity of ecosystems at risk.		
2.3 - The organization shall implement forest technology that is suited to local characteristics.	• evidence that the silvicultural technology employed is based on the results of research and studies performed under conditions similar to those of the forest management unit; • evidence that documented procedures for the activities of seedling production, tree planting, replanting, silvicultural treatments, road construction and maintenance, harvesting and transportation of forest raw • material are updated; • evidence that procedures incorporate shall from the experiments, tests and research performed in the region; • existence of formal mechanisms of technology transference to the forest workers and to third parties of the own organization; • evidence of implementation of forest worker training and capacity building programs;		

	• Evidence that equipment, machinery and supplies are suited to local conditions of topography, soil, climate and characteristics of produced forest resources.		
2.4 - A system shall be implemented so that the flow of forest raw materials from their origin in the forest till the processing yard.	• existence of an updated register for the forest management unit; • existence of sales or purchase contracts for the forest raw materials; • existence of procedures for raw material identification at the forest management unit; • existence of procedures for identifying, protecting and handling forest raw material at intermediary storage yards; • existence of procedures for controlling forest raw material in the processing yard; • Existence of inventory control reports.		
3.1 The introduction and the utilization of genetic material shall be carried out in a controlled way following biosecurity standards. Previous experience with such material shall be available in order to, besides attesting the forest production potential in the region, allows for the assessment of any possible environmental impacts.	• Existence of a program implemented to extend the genetic base. • existence of previous experience or some reference in the region or at the site, attesting the forest production potential of the genetic material for the desired objective; • existence of a program implemented for continuous assessment of alternative genetic materials; • evidence of compliance with biosecurity standards and techniques when using genetically modified • organisms		
3.2 - Forest operations shall be undertaken with protection of remaining ecosystems taken into consideration. Unique ecosystems of environmental, archeological, historical, cultural or social importance shall be preserved.	• forest plantations, as well as infrastructure works, must be established in already anthopized areas or in areas that are susceptible to suppression as set forth by legislation; • layout and planning of forest plantations interspersed with patches of native vegetation, thereby contributing to the formation of ecological corridors for resident and migratory fauna; • existence of mapping or demarcation of habitats of threatened species; • evidence of restricted access and implementation of surveillance in areas where threatened species occur; • existence of mapping, demarcation and protection of historic, archeological sites, and those of cultural and social value; • identification of the existing conservation units in areas influenced by the production activity; • Evidence of actions to restore permanent preservation areas that have been degraded.		
3.3 - Forest protection techniques and integrated management of pests and diseases techniques shall be adopted.	• existence of an integrated pests and diseases management plan; • Existence of a system for prevention, surveillance and control of forest fires, undertaken on its own or in conjunction with other entities. Deliberated fires must be used under proper technical supervision and effective control measures; • existence of monitoring and recording of meteorological, pest and disease conditions; • evidence of procedures aimed at minimizing the use of chemical products in the control of infestation and disease; • Existence of pest and disease prevention or control measures using natural biological control agents, aside from silvicultural, genetic, physical or mechanical techniques.		
3.4 - Natural ecosystems shall be monitored so as to provide information on their biological resources to be used in confirming or revising the management plan. The level of monitoring shall be compatible with scale of operations.	• existence of phytosociological surveys and studies on the structure of remaining native vegetation; • existence of periodic surveys or inventories that are sufficient to detect imbalances in the composition of local wildlife; • evidence that the results of the periodical surveys and inventories are being incorporated into the management plan; • Existence of lists of threatened species occurring in the forest management unit or its vicinity, and about the plans to protect them.		
3.5 - Areas of relevant ecological interest, as declared by legislation or recognized for their exceptional natural, socio-cultural or environmental attributes, shall be maintained and protected.	• existence of maps or sketches indicating permanent preservation areas and legal reserves, with their respective identification; • existence of silvicultural practices or procedures aimed at protecting, restoring and maintaining areas of relevant ecological interest; • existence of measures or plans for conserving or managing refuge areas or wildlife reproduction; • Existence of monitoring of invasive wild plant and animal species that may alter the equilibrium among naturally occurring species.		
3.6 - Hunting and fishing activities shall be controlled within the forest management units, in accordance with current legislation.	• existence of a hunting and fishing surveillance and control system; • existence of signage and notification instruments regarding the control of hunting and fishing; • existence of measures favoring the reproduction and movement of local wild animals; • Existence of information for employees regarding the control of hunting and fishing.		

4.1 - Forest management shall be based on environmental planning prior to the area use.	• documented evidence characterizing the soils existing in the forest management unit; • documented evidence characterizing water resources, taking into consideration the watershed(s) where the forest management unit is located; • existence of procedures for selecting and locating planting and road network areas; • evidence that silvicultural activities are planned and executed by taking local climatic data into consideration; • Evidence that the identification of areas of environmental importance take into consideration the particular properties of soil and water resources of the concerned area.		
4.2 - Water and soil resource conservation, monitoring and maintenance practices shall be adopted.	• evidence of the adoption of techniques aimed at soil conservation; • existence of procedures for base or cover fertilization that consider: a) the nutritional requirements of the planted species, b) the levels of essential elements existing in the soil, c) the intrinsic characteristics of each fertilizer, d) the existing climatic conditions. • existence of monitoring of the qualitative and quantitative parameters of the relevant water and soil resources; • Evidence that the road network and fire breakers are maintained in conditions that do not favor soil erosion.		
4.3 - The forest producer shall adopt a policy of rational use of chemical products in general.	• evidence that technical recommendations are observed for the handling, preparing and applying of chemicals products required for forest operations; • existence of registers of use of chemical products; • evidence that chemical products banned by current international agreements or national legislation are not being used; • evidence that technical personnel and forest workers who handle or apply chemical products are trained to do so and use the appropriate personal protective equipment; • evidence that storage of chemical products complies with the manufacturers recommendations and current legislation; • evidence that chemical products transport between storage areas and the field is done with the appropriate equipment or vehicles and appropriate licenses or permits; • existence of chemical product usage procedures that take into consideration climate, soil, and topographical conditions; • existence of maintenance procedures for the equipments that can potentially generate pollutants; • Existence of control and destination systems for residues and packing.		
4.4 - The producer shall adopt and implement a policy aimed at reducing or properly treating solid, liquid and gaseous residues.	• existence of an implemented system for the selective waste collection; • evidence that hazardous residues are sent to licensed sanitary landfills or to companies that are licensed to perform the appropriate treatment; • evidence that residues and other liquid effluents are treated and disposed in accordance with current legislation; • existence of plans for controlling or monitoring spills and runoffs; • evidence of a program for monitoring and controlling gaseous emissions from vehicles and motorized forestry equipment; • Existence of a reduction or use program for the forest harvest residues.		
5.1 - The forest producer must encourage programs of interest to the community, with a view toward improving the living conditions of the local community.	• evidence that socioeconomic parameters for the region are being used in the implementation or operation of the forest management unit; • evidence that the non-predatory habits and customs of the local communities are being respected; • evidence that priority is given to the inhabitants of local communities participation in the various activities related to the forest management unit, including the supply of goods and services; • existence of measures promoting local enterprises; • existence of actions promoting health programs in conjunction with the local communities; • evidence of implemented occupational health, safety and hygiene programs; • existence of measures promoting environmental education programs in conjunction with the local communities; • evidence of implemented environmental education programs for forest workers; • Existence of measures promoting the development of social forest programs, which attend to the needs of the local communities.		
5.2 - The organization shall implement dissemination and communication programs for stakeholders	• existence of procedures or instruments for clearly and objectively disseminating information regarding activities and means of operation of the forestry enterprise; • evidence of implemented programs to promote communication on matters of common interest of the organization and stakeholders, both internally and externally;		

	• evidence of the receipt, analysis and response to questions and of adapting conciliatory measures aimed at resolving any disputes between the representatives of the forest management unit and the interested parties, both externally and internally; • Evidence of good relations with the organizations that represent local society, with government agencies and with related entities.		
Criteria related to native forests:			
1.1 - The organization shall carry out the activities related to forest management, according to legislations and forest and current environmental regulations.	• existence of procedures that identify the legislation and other regulations applicable to the activities carried out in the forest management area; • Existence of records that prove fulfillment of legislation and of other regulations applicable to the activities carried out in the forest management area.		
1.2 - The rights of the local, traditional, and indigenous populations, of using and occupying forestlands, shall be respected, according to the legislation in force.	• evidence that the legal rights of the local, traditional, and indigenous populations are respected; • evidence that the borders between neighboring or bordering areas and the forest management area, are identified, delimited, and respected; • .existence of document of direct use, domain or land tenure, according to the current agrarian legislation; • Evidence that the organization acts in an effective form for the resolution of possible conflicts or legal disputes related to land tenure and losses inflicted to third parties.	NOTE In the case of the communities existing within the property, the area of forest management use should be delimited	
1.3 - The labor, pension, and tax legislations shall be complied with.	• evidence that pension issues of all forest workers are in conformity with the current legislation; • evidence that the aspects pertinent to the labor issues are in conformity with the legislation in force, regulatory labor standards, agreements and collective conventions; • evidence that the organization has fulfilled its fiscal and tax obligations; • evidence that the measures with the service providers are taken, aiming its compliance labor, tax, and pension legislation, as well as regulatory labor standards, agreements, and collective conventions; • Existence of an occupational safety and health management program.	The management program consists of at least: Policy, objectives, and targets; Planning; Procedures; Resources; Measurement, analysis, and improvement.	
1.4 - The organization shall disseminate to those involved in forest management the applicable current legislation.	• existence of the procedures for the dissemination of the applicable current legislation; • Evidence of the efficacy of the dissemination mechanism for the applicable current legislation.		
2.1 - The organization shall adopt strategies oriented towards sustainable use and management of forest resources.	• existence of procedures aimed at: a) identifying all environmental aspects that can be influenced and the resulting impacts; b) characterising and analysing the significant environmental impacts; c) establishing measures for turning positive environmental impacts; d) establishing measures for avoiding, mitigating or compensating significant negative environmental impacts caused by forest management activity; e) monitoring the implementation of measurements in order to avoid, mitigate, or compensate significant negative environmental impacts caused by forest management activity. • Evidence of the adoption of practices that indicate efficient and environmentally adequate use of forest resources; • existence of documented procedures for activities of silvicultural treatments, opening, and maintenance of roads, harvest, and transport of forest products; • Evidence of the procedures of protection against land invasion and illegal logging of forest products in the forest management area.		
2.2 - The Forest operations shall be backed by sustainable forest management plans.	• Existence of a legally approved forest management plan. • Evidences that the forest management plan assures the sustainability of the harvest in terms compatible with the cutting cycle. When it is the case, the forest management plan shall assure the incorporation of new areas; • existence of technical and economical justifications, documented for the dimensioning of forest management operations; • existence of planning of the pre-harvesting and harvesting operations, aiming at minimizing the negative impacts, caused by the harvest of the remaining forest; • evidence that the forest management plan was made and is carried out by a legally licensed professional; • evidence that the organization aims at improving the botanical identification; • evidence that the forest management plan is monitored and revised by a legally licensed professional, incorporating the surveillance results; • existence of procedures documented and fulfillment of emergencies and contingency plans; • existence of continuous forest inventory, adjusted to the planning, assessment of the harvesting and monitoring of the		

	forest; • evidence that the objectives and targets of the forest management plan are known by the forest workers and disseminated to the local populations;		
2.3 - The organization shall implement appropriate forest technology to the local peculiarities.	• evidence that the technology employed is backed by the results of studies and researches carried out for conditions similar to those of the forest management area; • evidence of revision of the procedures for execution of the forest management operations; • evidence that the operational procedures incorporate successful results and technically based on experiences, tests or researches carried out in the region, in order to improve the conduction of forest management; • Evidence that the equipment, machines, and consumables are adequate for the local topographic, soil, climatic conditions and to the forest management characteristics. • Evidence that training and labor capacity-building programs are implemented, with the following purposes: a) technically build the capacity of forest workers; b) avoid occupational illnesses and accidents; c) minimize occurrences of negative environmental impacts.		
2.4 - There shall be system implemented that makes possible to trace the flow of forest products from their origin.	• existence of updated register of the forest management area; • existence of documented identification procedures for forest products in the forest management area; • existence of documented procedures of identification, protection, and handling of forest products at intermediary storage yards; • Existence of stock control records.		
3.1 - Forest protection technique shall be adopted.	• existence of information and resources adequate for prevention, vigilance, and control of forest fires; • existence of information and resources adequate for the prevention and control of pests, illnesses, invading species; • Evidence of the procedures, which aim at the adequate use and minimization of the employment of agrotoxic products.		
3.2 - The biological resources of the Forest management area shall be monitored in order to provide information for the confirmation or revision of the forest management plan.	• existence of initiative, support or partnership for the surveillance of the fauna and local flora; • Evidence of incorporation of the surveillance results of the flora and fauna to the forest management plan.		
3.3 - The forest operations shall be carried out considering the protection of the remaining ecosystems. Unique ecosystems with environmental, archaeological, historic cultural or social importance have to be preserved.	• existence of procedures for the conservation of flora and fauna within its natural habitat; • existence of protection procedures in case of the occurrence of endemic species, rare or endangered in the forest management area; • existence of mapping, demarcation and protection of historic, archaeological sites of cultural or social value; • identification of the existing conservation units in the influence area of the enterprise; • Existence of clear definition, mapping, and documentation of the permanent preservation areas and of the legal reserve, within the forest management area.		
3.4 - The degraded areas within the forest management area shall be recovered or recomposed, according to the current legislation.	• existence of maps, sketches or images that indicate the degraded areas in the forest management area; • Existence of silvicultural practices and procedures that aim at recovering or recomposing the degraded areas.		
3.5 - Hunting and fishing activities shall be controlled within the forest management units, in accordance with current legislation.	• Existence of vigilance measures and hunting and fishing control; It is understood that the activities above are carried out in collaboration with the competent authorities. • existence of signalization and warning instruments for hunting and fishing control; • Existence of information dissemination to the forest worker and local populations regarding hunting and fishing control.		
4.1 – Forest management shall be based on environmental planning before the use of the area.	• documented evidence of the characterization of the water resources, considering the microbasin(s) in which the forest management area is inserted; • existence of procedures for the definition of the forest management area and locating of the road network, taking into consideration the local topography, the soils, and the water resources; • Evidence that the forest management activities are planned and carried out, taking into consideration the topography, soils, water resources, and the climate.		
4.2 - Water and soil resource cnservation, monitoring and maintenance practices shall be adopted.	• evidence of the adoption of techniques that aim at the conservation of the soil of the water resources; • existence of assessment of qualitative and quantitative parameters of water and soil resources, which are, directly or indirectly under the control and influence of the organization1) ; • evidence that the road network and clearings are kept in conditions that do not favor erosion and that keep the water		

	courses; • Evidence that practices for the conservation and re-composition of the permanent preservation areas are adopted.		
4.3 - The organization shall adopt a policy of rational use of agrotoxic, oil, and fuel products, and forwarding of its residues and packaging.	• evidence that the technical recommendations for the handling, preparation, and applying of the necessary agrotoxic products in the forest operations are verified; • existence of agronomic guidelines in the use of agrotoxic products; • evidence that agrotoxic products banned by international agreements or laws in force in the country are not used; • evidence that the storage of the agrotoxic products, oils, and fuels meet the recommendations of the manufacturers and of the current legislation; • existence of a control and forwarding system of agrotoxic products, oils, and fuels, and of its packaging; • evidence that the forest workers who handle and apply agrotoxic products are licensed and make use of individual protection equipment; • Evidence that the transport of agrotoxic products, oils, and fuels in the storage places and the field is carried out with appropriate equipment and vehicles, according to legislation in force.		
4.4 - The organization shall adopt and implement a policy for the reduction, reutilisation, recycling, or adequate treatment of solid residues, liquid effluents, and gaseous emissions.	• existence of a system of selective collection and residue storage; • evidence that the dangerous residues are forwarded to the licensed industrial landfills or sent to licensed companies, in order for them to carry out the adequate treatment; • evidence that the residues and effluents are treated and laid out according to current legislation; • existence of control plans and monitoring of spills and leakages; • existence of initiative for the reduction and use of forest harvest residues; • Existence of the preventive and corrective maintenance programming of machines, vehicles, and equipment.		
5.1 – The forest organization shall incentive programs of community interest, in order to improve the life conditions of the local population.	• evidence of the identification of social and economic aspects upon which it is possible to have influence and the resulting impacts; • evidence of actions for avoiding, mitigating or, when applicable, compensating significant negative social and economical impacts resulting from its operations; • evidence of measures aiming at turning feasible positive social and economic impacts; • evidence that the non-predatory habits and customs of the local, traditional, and indigenous populations are respected; • evidence that the intellectual property of the traditional and indigenous populations is respected; • evidence that priority is given to the participation of inhabitants of the local populations in the different activities related to the forest management area; • existence of actions that stimulate local enterprises; • existence of actions that stimulate health programs with local populations; • existence of forest worker health, alphabetization, security, and hygiene programs implemented, accessible to their direct dependents; • existence of actions that stimulate environmental education programs developed with local populations; • existence of environmental education programs for the workers of the enterprise;		
5.2 - The organization shall implant programs of dissemination and communication with the interested parties.	• existence of procedures and instruments for clear and objective dissemination of the activities and forms of action of the forest enterprise; • existence of communication channel between forest organization and the interested parties; • evidence of conciliatory measures adopted for the resolution of conflicts between forest producer and the interested parties; • evidence of good relationship with representative organizations of the local society and related entities; • Evidence of the civil society or public institutions in the divulgation and communication programs.		

Lembaga Ekolabel Indonesia LEI (forest)

General characteristics:	
Status:	In implementation
Geographical coverage:	Indonesia
Scope:	Forestry products (only for natural forests)
Initiator system:	The Indonesian Ecolabeling Institute (LEI) was first established in 1994 as a working group. In June 1998, the SFM Certification System for production forests developed by LEI with the inputs from forestry stakeholders, was officially adopted as an Indonesian National Standard by National Standardization Body of Indonesia [92].

Short summary system or initiative:	Extension system:	
LEI is a non-profit constituent based organization promoting forest certification for SFM. It includes: • Forest Certification (Natural Production Forest, Timber Plantation, Community Based Forest Management) • Chain of Custody • Timber Legality Verification and Timber Tracking (Legal Origin Verification)	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Y

Context:
ITTO and FSC form the basis of the LEI principles and criteria [92]. The development of the LEI national standard raised the issue of its relationship with FSC. Although FSC was widely accepted by international markets, Indonesian stakeholders involved in LEI insisted that any Indonesian certification assessment should use the LEI system. The situation encouraged FSC and LEI to co-operate and, since 1998, all certification activities in Indonesia's natural forests have been done using both systems under a Joint Certification Protocol (JCP). This arrangement is supported by GTZ, the German donor agency [93].
Status of system:
In response to the difficulties in implementing full certification and to market demand to demonstrate the verification of legality in certification, in March 2007 LEI launched a phased approach based on a specific standard, in which the first step is compliance with legal requirements. Another set of standards and procedures is under development for the management of non-timber forest products [94]. To operate the certification system, LEI has developed supporting elements such as: (i) a manual of accreditation, and the accreditation of certification bodies (CBs); (ii) training for assessors and certification decision-makers; (iii) a personnel registration body; (iv) a dispute settlement mechanism; and (v) regional multi-stakeholder communication forums (RCFs) at the provincial level to facilitate public consultation during the certification process [94]. Eleven forest management units covering 1.107 million hectares are certified under the LEI certification system; one timber product manufacturer has a CoC certificate [94]
Planned activities:
-

Structure system or initiative:	
Juridical basis:	Voluntary
Participation in system:	LEI governance includes a national general meeting. It has 142 members organized into four chambers representing all the relevant non-governmental stakeholder groups in Indonesia [94]. [92] mentions that secondary sources indicate that development of the standard was based on an extensive process of stakeholder consultation. However available documentation includes no details of the standards setting process or of the organizations which participated.
Local stakeholder involvement	LEI requires that the certification body encourages community input [92].
Monitoring performance:	
Chain of custody system	LEI's CoC certification system requires the physical separation of timber, a log-tracking system, timber tagging, and demonstrated performance of the log-tracking system. The assessment process covers the previous three years and is documentation-based [94].

	The LEI logo can be used if the end-product contains 100% certified wood. The LEI Manual 22-02 on Logo Use allows both off-product and on-product use of the logo [94].
Level of detail CoC system:	Accreditation: LEI act as the standards-setting body and accreditation authority. It approves certification bodies to carry out assessments against the standard. LEI is not a recognized national accreditation body and has no other national affiliations. In Indonesia the national accreditation organization is the Accreditation Body of Indonesia (Komite Akreditasi Nasional - KAN-BSN). Even though LEI is not a member of international accreditation alliances, its system makes sufficient reference to international schemes and standards, such as ISO, ILO, ITTO, FSC, and BSN. BSN is an ISO member and has endorsed LEI standard for natural production forests. LEI accreditation program, particularly the recently published Manual 11, refers to BSN Guide 3, which is based on ISO/IEC Guide 61. It also refers to ISO/IEC Guide 62 [94]. LEI have carried out the accreditation function and are in the process of revising this [94]. Auditing: Certification bodies must conform with LEI Guideline 99-01 which defines specific requirements for certification against the LEI Standard 5000 in Indonesia [92]. LEI Standard 99-01 used ISO Guide 62 as a key reference in drawing up the criteria. LEI is not directly affiliated to ISO or IAF [92]. LEI Guideline 99-03 establishes requirements for members of Expert Panels that are responsible for taking certification decisions. Certification bodies establish Expert Panels to assess the information derived from field assessments and the community consultation process. Certification decisions are not simple pass/fails, but are rated into five categories (Gold, Silver, Bronze, Copper and Zinc) depending on extent of conformance with the standard. Certificates are only issued for the first 3 categories [92]. The forest certification matrix indicates “a minor observation” when indicating whether the certification bodies are conform ISO 62, 66 and 65 [95]. Verification: Mandatory field assessment forms a major component of the LEI process. To maintain the credibility of the Certification Decision, the Certification Body will periodically monitor and assess the already certified management units. Surveillance is conducted at least twice within a period of 5 years for management units awarded golden rating, at least 3 times for silver rating, and at least 4 times for bronze rating. The surveillance visit is conducted at the latest within the first year. The LEI standards provide several documents related to certification administration. Assessors, for example, should understand LEI doc-1 and LEI doc-2 for field assessment. Assessors must check the detailed indicators in the field as written in the LEI documents [93].

Further information on:	
Removal of trade barriers	
Costs:	

The LEI system consists of three elements: standard, procedures, and requirements. The standard contains a hierarchical order of principles, criteria, indicators and verifiers. It is oriented towards performance rather than management system and divided into three broad areas: (i) the sustainability of production functions, including criteria for forest resource, forest production, and business sustainability; (ii) the sustainability of ecological functions, including criteria for ecosystem stability and species survival; and (iii) the sustainability of social functions, including criteria for secure community-based tenure, community resilience and development, social and cultural integration, community health, and employee rights [94].

List of principles included:	
1	Principle: Sustainability of Production
2	Sustainability of Social Functions
3	Principle: Ecological Sustainability

- No principle on pest control is included: The standard is for application to natural tropical forest management which by its nature relies on natural forms of pest control. References to artificial pest control is considered to be inappropriate [92].
- No specific reference to exotic species. The standard is for application to natural tropical forest management, involving selective harvesting and reliant on natural regeneration of native tree species, so references to exotic species is considered to be inappropriate [92].
- The standard is for application to natural tropical forest management, involving selective harvesting and reliant on natural regeneration of native tree species, so references to genetically modified organisms and the use of chemicals is considered to be inappropriate [92].

Criteria [92]: ***Not all indicators are complete***	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
1a. Criteria: Sustainability of Forest Resources	P1.1 Guarantee of land utilization as a forest area P1.3 The extent of change in the enclosure of land due to the encroachment and conversion of forest area functions, fires and other impediments. P1.4 Forest fire management system P1.6 The guarantee of the existence and variety of non-timber forest products		
1b. Criteria: Sustainability of Forest Resources and Products	P2.1 Area organization ensures the continuity of production activities at all levels of planning and their implementation. P2.2 Observation of the growth of stands and their yield P2.3 Annual production in accordance with the capability of forest productivity P2.4 Efficiency of forest utilization P2.5 Condition of remaining stands P2.6 Validity of timber tracking system in the forest. P2.7 Infrastructure of forest management in the harvesting of forest products P2.8 Implementation of reduced-impact logging P2.9 Allocation of forest products utilization for local communities		
1c. Criteria: Sustainability of Business	P3.1 Financial condition of the company P3.3 Management Information System (MIS) P3.2 Contribution to regional economic development P3.4 The availability of professional staff for planning, protection, production, and management of forest and business P3.5 Investment and reinvestment for forest management P3.6 Increase of forest capital		
2a. Criteria: Guaranteed Community-based Forest Tenure System	S1.1 Boundaries between forest concession areas and local community areas are clearly delineated and agreed upon by concerned parties S1.2 Guaranteed access and full control of traditional forest areas to the community through generations. S1.3 Guaranteed access and full control to forest product utilization in concession areas to communities through generations. S1.4 The use of appropriate procedures or mechanisms for the solution of overlapping claims on the same forest area		
2b. Guaranteed Resilience and Community and Employees' Economic Development.	S2.1 The economic resources of the community should at least be able to support the continuity of inter-generation livelihood S2.2 Recognition and formal (legal) compensation for the use and implementation of the community's traditional knowledge in the management system S2.3 The access to employment and business opportunities for the community. S2.4 The growth of domestic capital. S2.5 Periodic review of programs to increase employees' welfare and appropriate accommodation facilities.		
2b. Criteria: Guaranteed Continuity of Social and Cultural Integration of Community and Employees	S3.1 Human rights are guaranteed S3.2 The impact of management units on social and cultural integration is minimized S3.3 Empowerment of community and employees is promoted		
2c. Criteria: Realization of the Responsibility to Safeguard Nutritional Status and Prevent Negative Impacts on Community Health	S4.1 The impact of management unit activities on community health is minimized S4.2 Cooperation with health authorities is established		
2d: Assurance of Workers' Rights	S5.1 Mutual Work Agreements are in existence and implemented S5.2 Regional Minimum Wage and a fair salary structure are implemented S5.3 Health and Safety regulations are implemented		
3a. Criteria: Stability of the Ecosystem	E1.1 The percentage of protected area that functions well compared to the total area that should be protected, as confirmed and/or recognized by the parties concerned. E1.2 The percentage of protected area that is designed well compared to the total size that should		

	be protected and which has already been delineated in the field E1.3 The intensity of damage in the protected areas which includes the danger of forest fires E1.4 The condition of flora and/or fauna species diversity in protected areas in various forest formations/types within management units E1.5 The damage intensity of forest structure and plant species composition E1.6 The damage intensity of production management activities on soil conditions E1.7 The damage intensity of production management activities on water conditions E1.8 The effectiveness of management towards the damage done to stand/forest structure and compositions E1.9 The effectiveness of controlling techniques on the impact of production management activities on soil conditions E1.10 The effectiveness of controlling techniques on the impact of production management activities on water conditions E1.11 The effectiveness of providing awareness of the importance of conserving the forest ecosystem as a life support system, and the impact of overharvesting activities on the forest ecosystem and the importance of conserving endangered/endemic/protected species		
3b. Criteria: Survival of Endangered/Endemic/Protected Species	E2.1 The percentage of protected area as defined based on consideration of endangered/endemic/protected species or unique ecosystem (special area) existence which has been confirmed and/or recognized by concerned parties E2.2 The percentage of well-designed protected area, set aside for the survival of endangered/endemic/protected species or protection of a unique ecosystem, which has already been delineated in the field E2.3 The damage intensity to endangered/endemic/protected species in those areas with a unique ecosystem E2.4 The condition of endangered/endemic/protected species in those areas with a unique ecosystem E2.5 The impact intensity of production management activities towards endangered /endemic /protected plant species and their habitats E2.6 The impact intensity of production management activities towards endangered /endemic /protected wildlife species and their habitats E2.7 The security of endangered/endemic/protected plant species and their habitats E2.8 The security of endangered/endemic/protected wildlife species and their habitats		

Pan African Forest Certification Scheme PAFC (forest)

General characteristics:	
Status:	In implementation
Geographical coverage:	African countries
Scope:	Natural forests
Initiator system:	In December 2000, the African Timber Organization (ATO) decided to establish a Pan African Forest Certification System based on regional Principals, Criteria and Indicators (PCI) [96].

Short summary system or initiative:	Extension system:	
The African Timber Organization (ATO) with the assistance of CIFOR has established the Pan African Forest Certification scheme (PAFC), which confirms to those of the ITTO criteria and indicators.	Principles included:	
	Criteria included:	
	Indicators included:	
Context:		
The PAFC is based on the ATO/ITTO principles (see also ITTO).		
Status of system:		
Most of the countries in Central Africa have adapted the principles, criteria and indicators of ATO/ITTO to their national contexts in connection with national taskforces. Various national associations are being put in place in order to develop the national certification systems; in this way, PAFC-Gabon was set up at the end of 2004. PAFC Gabon (GFCS) decided to implement the ATO/ITTO PCI which had been developed and validated by the National Working Group. As such, the Forest Management Standard of the GFCS is similar to the ATO/ITTO PCI's that had been developed by the NWG. In May 2006 the GFCS was validated and adopted at the national level.		
Planned activities:		
The PAFC Gabon Forest Certification Scheme was endorsed by the PEFC Council as meeting the PEFC Council requirements on 24 April 2009. The endorsement is valid for three years [79].		

Structure system or initiative (based on PAFC Gabon):	
Juridical basis:	Voluntary
Participation in system:	The PAFC General Assembly, consisting of colleges (Social, Professionals, Environmental and Forest Owners) was responsible for the initial standard setting of the GFCS. In each college different organizations had a seat (NGO's, University, Consultants, Forest Companies etc) [96]. Although the colleges that were responsible for the PAFC Gabon standard setting procedure for the GFCS represented a wide variety of stakeholders according to [96], it was not clear from the documentation, or from the field mission if consensus building procedures have been appropriate/balanced.
Local stakeholder involvement	The certification body must form, as a prerequisite to the audit, a consultation group of stakeholders as large as possible in an effort to assure that all pertinent problems are identified and are in compliance with the standard requirements [96].
Monitoring performance:	-
Chain of custody system	PAFC Gabon has integrally adopted the PEFCC requirements for Chain of Custody (Annex 4). PAFC Gabon has its own trademark [97].
Level of detail CoC system:	Forest management certification is delivered for a 3-year period by independent certification bodies, accredited by COFRAC (COmité FRançais d'ACcréditation) or any other accreditation body member of EA (European Accreditation) or IAF (International Accreditation Forum), according to a specific program, which defines the requirements that certification bodies have to respect, concerning PAFC forest management certification. This accreditation program is based on the ISO 17021 norm [96]. <u>Audits:</u> Audits are carried out by an independent firm that has been accredited by the FSC, and within a framework that it has recognized. This frame of reference is either based on national initiatives, or proposed by the audit firm [98]. CoC certification is delivered for a five-year period by independent certification bodies

	accredited by COFRAC or any other accreditation body member of EA or IAF based on ISO Guide 65 and according to a specific program which defines the requirements that certification bodies have to respect concerning PEFC CoC certification [96]. Verification: The process includes a mandatory pre-audit, then an initial audit, and regular annual audits. Forestry certifications and chain of production are accorded for a maximum period of 3 years. In the third year, the license must be entirely renewed in case of forest certification [98]. The certification body must form, as a prerequisite to the audit, a consultation group of stakeholders as large as possible in an effort to assure that all pertinent problems are identified and are in compliance with the standard requirements [96].

Further information on:	
Removal of trade barriers	
Costs:	

List of principles included in PAFC Gabon [97]:	
1	Sustainable forest utilization and maintenance of the multiple functions of the forest are a high political priority (defined at national level, not further included in criteria).
2	The forest management unit, designated for whatever form of land-use, is sustainably managed with a focus on supplying the required goods and services.
3	The main ecological functions of the forest are maintained.
4	According to the importance and intensity of forest management operations, the manager of the forest management unit (FMU) shall contribute to the improvement of the economic and social well-being of workers present in the FMU and local populations.

In addition to the "Gabon PCI", the certification body must confirm the following points, at the level of the management unit if they are applicable in the region:

- The maintenance, the improvement and the follow up of the health and vitality of the forest, including the biotic risks (for example fire) are assured ;
- Fertilizers are used in accordance with national and international regulations, and the certified body will not use them excessively,` which would risk pollution ;
- The management and prevention of damage caused by forest grazing (domestic or wild animals) is effective if the level of natural regeneration process in natural forests is threatened;
- That forest management guarantees the maintenance of a sufficient number of old trees, dead or decaying trees, in order to safeguard biological diversity.

International Labour Conventions ratified in Gabon:

- No. 29: Forced Labour, 1930
- No. 87: Freedom of Association and Protection of the Right to Organize , 1948
- No. 98: Right to Organize and Collective Bargaining, 1949
- No. 100: Equal Remuneration, 1951
- No. 105: Abolition of Forced Labour, 1957
- No. 111: Discrimination (Employment and Occupation, 1958
- *Not ratified: No. 138: Minimum Age for Admission to Employment, 1973*

In order to respect requirements of Convention No. 138 and Law No. 3/94, the CB will therefore have to respect the following conditions: a) children will not be able to be employed before sixteen years of age; b) employment or work of adolescents aged sixteen to eighteen will be possible, on condition that their health, security and moral education be fully guaranteed and that they receive specific and appropriate instruction or professional training.

Among the international conventions and protocols, four are considered fundamental by the PEFC Council:

- Convention on Biological Diversity – June 1992 (ratified by Gabon in 1997) ;
- Cartagena Protocol on Preventing Biotechnological Risks Related to the Convention on Biological Diversity (non ratified) ;
- The United Nations Framework Convention on Climatic Changes Convention (ratified by Gabon in 1997) and The Kyoto Protocol (ratification pending) ;
- The Washington Convention or the Convention on the International Commerce of Wild Fauna and Flora Species Endangered of Extinction - CITES (ratified by Gabon in 1988).

The certification applicant must ensure that its sustainable forest management policies enters in the framework of the national policies in the reduction of build up of greenhouse gases, and complies with the recommendations of the Kyoto protocol. The certified body will attach notable importance to its energy policies and to the proper treatment of the waste products created from its activities, and have as its goal the reduction of gas emissions producing global warming.

Gabon has equally ratified the following protocols and conventions:

- Alger Convention or The African Convention on the Conservation of Nature and of Natural Resources (ratified in 1988) ;
- The Stockholm Convention on Persistent Organic Pollutants - POPs (ratified in 1985) ;
- The Geneva Convention or the International Tropical Timber Agreement– ITTA (ratified in 1985) ;
- The Ramsar Convention relating to wetlands of international importance (ratified in 1987).

These conventions must equally be known to the certified body and be available. The elements of these conventions concerning the certified body must be applied.

The certification applicant must evaluate the social and environmental impacts of its activities. A social and environmental impact study must be adapted to a scale and intensity of the operations of forest management and integrated in an adequate fashion to system management. The evaluations must include considerations at the landscaping level as well as the impact of a wood processing plant put in place.

Criteria (based on PAFC Gabon) [97]:	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
2.1 The management of the forest complies with all laws in force and with all the international treaties Gabon has signed.	• The forest management shall respect all local and national laws, and meet all administrative requirements. • The taxes, royalties and other fiscal payments, established by law, shall be paid. • The management operations comply with the existing national technical norms *Sub indicators are included but only mentioned when considered relevant.*		
2.2 The forest management unit is managed with well defined and clearly established objectives within the perspectives of sustainable management.	The management of the forest is implemented from the basis of a legally assigned title deed, for a duration which is compatible with the defined objectives within the perspective of sustainable management The operator proves the possession of a recognized and licensed competence in management. • There is a comprehensive forest management document (management plan, exploitation plan with a rational management component for fauna, and other relevant documents) which fixes the different objectives assigned to the forest management unit within the perspective of sustainable management o A social plan of action and a management plan for fauna are included in the management documents. o The different uses of the forest and forestry products are identified. o The forest management unit is sub-divided in function to the different constraints identified during the preliminary studies and with the objectives adopted. o The maps showing the forest unit and its subdivisions, the distribution of resources, the village settlements, etc. have been prepared and are available o The surface area to be covered and the volume of produce that can be harvested during the management exercise are known and indicated on maps o Etc • A concession agreement negotiated between the stakeholders and annexed to the forest management document sets the operating modalities and the rights and obligations of the forest concessionaire and sub-contractors operating in the FMU. • The forest management is effectively implemented as soon as it is approved. • The prescriptions of the management document are known by all the stakeholders. • The minimum infrastructure useful for exploitation is maintained • While appreciating the need to respect the confidentiality of information, the forest concessionaire shall provide to different stakeholders, a summary of the basic components of the management plan. *Sub indicators are included but only mentioned when considered relevant.*		
2.3 Sustainable production of timber is ensured both in quantity and in quality.	• The pre-harvest inventory is efficiently carried out, in conformity with the standards in force, and at least three months before harvesting • The cycle and the possibility are clearly established and are compatibles with a supported production. • All harvesting is in conformity with the forest management document and the clauses of the concession agreement. • Wastage is minimized at all stages of production and processing • The forest concessionaire is able to provide all necessary documentation for monitoring and certification bodies, to enable them to follow up on the chain-of-custody of each forest product, from its origin • The Company managing the forest management unit develops effective mechanisms for the optimal commercialization and promotion of its forest products. *Sub indicators are included but only mentioned when considered relevant.*		
2.4 The silviculture techniques implemented in the forest management unit are compatible with the objectives of sustainable forest management, and are well adapted to the needs of management of the forest management unit and the expected production.	• Adequate efforts are made to define, verify and adjust, where necessary, silvicultural techniques, in accordance with the technical guide. • All possible silviculture treatments are applied at the level of the individual trees rather than at the forest stand population level. o The exploitation/harvesting of multi-purpose tree species, as timber, does not negatively impact on their other forms of utilization o Productive species of timber and NTFP in use, and their basis for utilization, are identified. o Silviculture techniques do not deplete harvest production supported by other forest products. o Harvesting methods of timber species for multiple uses in the village fining are found in the manual of specifications • The concessionaire will develop training policies for personnel.		

	Sub indicators are included but only mentioned when considered relevant.		
2.5 Within the forest management unit, non-timber forest products are exploited on a sustainable basis, in consultation with the relative stakeholders.	• Non-timber forest products (NTFP) in use, and their basis for utilization, are identified. • The necessary knowledge for the sustainable utilization of NTFP is available • Collaboration between the concessionaire and the local populations will permit sustainable management of the NTFP. *Sub indicators are included but only mentioned when considered relevant.*		
2.6 The forest management systems are regularly revised or maintained only in the exceptional cases where it is necessary.	• The implementation plan in continuously followed up and evaluated. • The forest management document is revised according to a pre-determined periodicity defined at the national level *Sub indicators are included but only mentioned when considered relevant.*		
3.1 The sustainable management of the forest resources is based on a "dynamic" acquisition of the knowledge on ecology.	• The available knowledge allows an ecological assessment and diagnosis of the forest ecosystems o Updated maps are available per type of vegetation, as well as level/stage of growth per degree of harvest. o There are topographical, hydrological network and infrastructure maps. o Databases on forest fauna and flora and their uses are available. o There are maps of the distribution of fauna showing the zones of high density and the main migration routes. o There are updated maps or data on the distribution of species to be exploited, endangered, rare or endemic. • Impact studies shall be carried out, in relation to the scale of exploitation, in accordance with the level and extent of scarcity of any resources of concern. These studies have to be integrated in the management systems. o Permanent sampling plots of intact and exploited forests are regularly monitored and documented o A monitoring of the impacts of the harvesting methods and their intensities on the forest stand is carried out. o Etc • A periodical synthesis of new scientific and technical data is made. • The results of the follow-up and new scientific or technical data are taken into account for the improvement of exploitation practices linked to harvesting. *Sub indicators are included but only mentioned when considered relevant.*		
3.2 The impact of harvesting activities on the structure of the forest is minimized.	• Reducing the impact of harvesting techniques are defined and implemented at the national level. • The harvesting methods do not impair the original structure and diversity of the forest o The conversion of forest to plantations or to non-forestry utilization forms of land-use shall not be encouraged, except in circumstances where the conversion: a) is related to a seriously degraded area/zone or a tiny part of the forest management unit; b) does not take place in areas of the forest with a high conservation interest; c) will ensure a clearly defined, substantial and additional conservation benefits to the forest management unit over a long-term period. *Sub indicators are included but only mentioned when considered relevant.*		
3.3 The impact of harvesting activities on biodiversity is minimized.	• At the forest concession level, values for high conservation of different areas are defined and localized. Specific measures are defined for each of this area within the context of precautionary principle. • Adequate procedures and guidelines exist and are implemented to identify and protect, in a manner which is representative of the diversity of habitats, and at a scale adapted to the subject to be preserved The fauna and flora species in danger, rare and threatened; The components of particular biological interest such as reproduction sites, rare habitats and key species. o Sensitive areas selected during the ecological diagnostic and assessments are included in the protected zones. o There is a map on different protected zones and forest pockets not to be exploited. o The limits of protected zones are clearly defined and marked in the field. o Standardized data on fauna and flora are available. • The diversity of species and the relative abundance of fauna do not significantly change. o Species diversity and density of flora are not significantly modified by the harvesting methods. o Rare and endemic species within a confined area of distribution are protected. o The use of biological control agents shall be documented, minimized, monitored and strictly controlled, in accordance with national laws and internationally accepted scientific protocols. o The use of genetically modified organisms shall be prohibited. o The use of exotic species shall be carefully controlled and actively monitored to avoid adverse ecological impacts. *Sub indicators are included but only mentioned when considered relevant.*		
3.4 The natural regeneration capacity of the forest is ensured.	• The conditions for natural regeneration are fulfilled and the regeneration process is maintained. • Measures are taken to promote natural regeneration whenever necessary.		

	Sub indicators are included but only mentioned when considered relevant.		

3.5 The impact of harvesting activities on water, soils and slopes is minimized	• The flow rate and the quality of water are maintained.
	  o There are no water retention areas created or areas with disrupted drainage in the FMU.
	  o The formation of sandbank and any form of filling of both watercourses and swamps do not significantly disrupt water flows.
	  o There are no signs of apparent chemical contamination of food chains and of aquatic ecosystems.
	• The impact of harvesting activities on the biological, physical and chemical characteristics of soils, and on the slopes is minimized.
	  o Harvesting and its related infrastructure avoid buffer zones and other sensitive areas in the slopes.
	  o Erosion due to the infrastructure is restricted within acceptable limits
	  o The disused secondary infrastructure (tracks for hauling, timber yards, quarries) is covered again by vegetation
	  o Management systems shall promote the development and adoption of environmentally friendly non-chemical methods of pest management and strive to avoid the use of chemical pesticides. WHO Type 1A and 1B and chlorinated hydrocarbon pesticides: pesticides that are persistent, toxic or whose derivatives remains biologically active and accumulate in the food chain beyond their intended use; as well as any pesticides banned by international agreement, shall be prohibited.
	  o Chemicals, containers, liquid and solid non-organic wastes including fuel and oil shall be disposed of in an environmentally appropriate manner.
	• Water and soil restoration program are implemented whenever necessary.
	Sub indicators are included but only mentioned when considered relevant.		

4.1 The rights and responsibilities of workers present in the FMU and of local populations are clearly defined, acknowledged and respected	• The legal and customary rights of local populations for ownership, use and tenure of their forest land and resources shall be clearly defined, acknowledged and respected • The modalities of access to natural resources are clearly defined and respected by all. • All relevant labour code regulations are applied. • Information and sensitization of all stakeholders on their rights and duties are ensured. • Damages caused are compensated according to the norms in force or after negotiation. *Sub indicators are included but only mentioned when considered relevant.*		
4.2 The concessionaire encourages the participation of local populations, present in the Forest Management Unit, in the management of forest resources	• The concessionaire sets up “ad hoc bodies” for consultation and negotiation with local populations. • The procedure for dialogue and the resolution of conflicts is functional both between stakeholders and within each stakeholder body • All stakeholders participate in the control of natural resources management, on the basis of a protocol accepted by all. • The consultation procedures of populations during the establishment and ascertaining of boundaries of the forest concession CFAD are respected • There are mechanisms for sanction in case of violation of rules agreed by stakeholders. *Sub indicators are included but only mentioned when considered relevant.*		
4.3 The share of benefits derived from forests is considered to be satisfactory by all stakeholders	• The forest manager works so that the local populations on the management unit and those bordering it receive part of the revenue generated by the exploitation of the management unit • Local communities living in or near the harvested forest area shall benefit from opportunities regarding employment, training, and other services • In accordance with the importance and the impact of the forest operations at the local level, the concessionaire promptly contributes to the development of local economy. *Sub indicators are included but only mentioned when considered relevant.*		
4.4 According to the importance and the impact of the forestry operations, the concessionaire promptly contributes to the improvement of public health and education of local populations.	• Preventive measures are taken by the concessionaire to minimize any professional hazards in relation to the forestry activities. • The health conditions of employees and their families are improved. • The health conditions of local populations are improved as the result of the contribution of forestry activities. • The concessionaire contributes to the basic education of local populations and workers present in the Forest Management Unit, in accordance with the contractual provisions operating in the country. *Sub indicators are included but only mentioned when considered relevant.*		

CERTFOR CHILE (forest)

General characteristics:	
Status:	In implementation
Geographical coverage:	Chile, linked to PEFC
Scope:	Forest products. In addition to the Sustainable Forest Management Standard, CERTFOR CHILE has developed a Chain of Custody Standard and a Group Certification Standard [99].
Initiator system:	Fundación Chile and the Chilean Forest Institute INFOR

Short summary system or initiative:	Extension system:	
CERTFOR Chile has developed a standard for plantations and native forests.	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Y
Context:		
In 2002, the Corporación CertforChile de Certificación Forestal", also to be known as "CertforChile", was established as a private non-profit organization [99].		
Status of system:		
Endorsed by PEFC in 2004 [9]. The standard has certified in Chile 1, 9 million of hectares.		
Planned activities:		
-		

Structure system or initiative:	
Juridical basis:	Voluntary
Participation in system:	Balanced participation of stakeholders in the standard setting or organizational process is not required [12]. Members are Fundación Chile, CIPMA, the Chilean Wood Corporation CORMA, the Department of Agriculture, CONAMA, and the Association of Registered Professional Foresters [12]. A representative range of interests pro-actively sought and involved. Towards the end of the process, two public consultations were held one month apart to allow further consultation and maturation of observations. [99]. The draft standard is discussed at a workshop with interested stakeholders. Documents are freely available [12]. Standard setting process conform ISO Guide 59 [9].
Local stakeholder involvement	A list of relevant stakeholders is prepared by the applicant who will be checked by the certifier to ensure all the relevant organizations are represented. A questionnaire is then sent to the stakeholders 30 days before the final evaluation. The summary of the questionnaires will be send to the group in charge of the audit for consideration [12]
Monitoring performance:	-
Chain of custody system	Chain of Custody tracks products from forest through each stage of manufacturing and distribution. Either physical separation for pure products or mixture with strict control of all non-CERTFOR-sources [12]: - Physical segregation - Percentage in = percentage out - Minimum average percentage Standard has its own logo [99].
Level of detail CoC system:	<u>Accreditation:</u> Independent third party certification bodies are accredited by the INN (Instituto Nacional de Normalización), Chiles national accreditation and standards body which is a member of the IAF. [99]. CoC- Accreditation body and Accreditation body conform ISO guide 61 [9]. <u>Audits:</u> Independent 3rd party certification with field works and national experts [9]. Certification body and CoC- Certification body conform ISO guide 62, 65, 66 [9]. <u>Verification:</u> Annual visits of the field, the certificate are renewed every 5 years [9]. Auditors must conduct on-site inspections of representative areas of plantations, and that representative forest operation and recently harvested areas must be checked on-

	site. Systems of sampling are an essential responsibility of the certification body and audit team. CoC: In all cases, the certified organization must have a fully documented management system that is capable of tracing the origin of certified timber entering the mill [99]. The auditor has to take consultancy of external stakeholders into consideration [100].

Further information on:	
Removal of trade barriers	
Costs:	

The CFCH standard is organized hierarchically into Principles; Criteria; Indicators, and Minimum Level of Compliance.

List of principles included [101]:	
1	Principle 1 requires that here is a forest management plan which is actualized and implemented. The plan clearly specifies the objectives of forest management.
2	Principle 2: The use of the forest resource should be planned and managed so that the environmental values of the natural ecosystem contained in the Forest Management Unit are protected and significant negative impacts on biodiversity are avoided.
3	Principle 3: Forest resources should be managed so as to maintain their health, vitality and productivity, by protecting them from fires and other damaging agents.
4	Principle 4: Forest resources are managed so as to promote soil conservation and to minimize adverse impacts on the quantity and quality of water resources, taking particular account of the needs of downstream communities.
5	Principle 5 requires that forest managers must respect the traditional and customary uses and rights of local communities, maintaining good neighbor relations with them and supporting the development of local capacities which contribute to the improvement of their quality of life.
6	Principle 6 states that forest managers must be aware of the presence of indigenous peoples in the area of their management activities and must know the rights of these peoples and respect them.
7	Principle 7: Forest managers will respect the rights of the forest workers, compensating them fairly and equitably, safeguarding their health and safety at work.
8	Principle 8.4 requires that tenancy and use rights over the land and forest resources are clearly defined, documented and legally established.
9	Principle 9: “Regular monitoring of the forest resources, the management system and the responsible companies and owners of the FMU, will be conducted with the purpose of evaluating the progress in achieving the stated principles”.

Criteria [99, 101]: *The criteria and indicators with * are translated from Spanish* *Not all indicators are listed (the relevant ones are)*	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
1.1 The responsible persons of the FMU commit themselves formally with Sustainable Forest Management and have to show the intention to continue with the forestry activity in successive rotations*.			
1.2 There is a documented and updated management plan in which the objectives of sustainable forest management are clearly specified*.	1.2.2 The management plan contains a description of the environmental and social factors that have to be considered for forestry management (e.g. areas of high environmental value, possible social impacts)* 1.2.4 The management plan is economically viable in the long term		
1.3 The management plan has clearly identified the land uses in the FMU*	1.3.1 The management plan contains a mapping with a clear distinction of the different land uses (actual and potential) in the FMU* 1.3.4 There is a long term plan to reduce the size of very large compartments with the purpose of reducing the negative impacts upon the soil, upon the hydrological system and upon the landscape, in particular with regard to clear felling of large areas.		
1.4 The harvest levels of the forestry products are clearly justified in the management plan and have to favor the maintenance and increase of the goods and services of the resources over time, taking into account the size of the FMU and the market conditions*.	1.4.1 For large FMUs the levels of harvest should ensure a sustained flow of forest products 1.4.2 All forest harvested must be re-established.		
1.5 The forest management is realized on the basis of the potential of the land use sites and their characteristics*	1.5.1 The species selected for planting are shown to be adapted to the soil and climatic conditions of the site as well as for the objectives of forest management. 1.5.2 There is a system to control the origin of seeds and seedlings used in the plantations.		
1.6 The application of new technologies, species or varieties on a large scale will be evaluated and monitored by the responsible persons of the FMU and will only be used if there is no scientific evidence that it will cause considerable negative environmental, social or economic impacts*.	1.6.1 There is a documented and well established procedure for carrying out environmental impact assessments. 1.6.2 Environmental impact evaluations include procedures for consulting interested and affected parties. The concerns of interested and affected parties are taken into account		
1.7 The use at commercial scale of genetically modified organisms will be subject to a careful scientific analysis, validated by a recognized scientific entity, considering its environmental impacts, and will include all regulations stemming from the national laws and the binding international protocols.			
2.1 No plantations will be established on areas with native forests or other type of high environmental value*.	2.1.3 Plantations should not replace natural forests or other native vegetation of high environmental value, neither productive natural forests, nor natural corridors. 2.1.4 New plantations should not increase the fragmentation of areas of native vegetation		
2.2 The planning of forest management in the FMU takes into consideration the existence and environmental value of appropriate management techniques for various types of flora and fauna that are in danger of extinction.	2.2.2 Areas of native vegetation have been classified according to their importance for biodiversity conservation 2.2.3 A significant proportion of the FMU is devoted for conservation purposes 2.2.4 Areas in which endangered species are found have been identified. Hunting of rare and endangered species is prohibited in the FMU.		
2.3 Areas with high conservation value native vegetation are managed so as to maintain the biodiversity they provide	2.3.1 There is a conservation plan for areas of high environmental value* 2.3.3 Native vegetation corridors are maintained to ensure the connection of HCV areas*		
2.4 Forestry operations are carried out in such a way as to minimize negative impacts on biodiversity and on the landscape.	2.4.3 Measures are taken to avoid the large scale invasion of native forests or other vegetation with high conservation value by exotic/alien invasive species.		
2.5 All staff (own labour or contractor labour) working in the FMU knows about the importance of biodiversity protection. They have been trained to carry out their work so that they can avoid			

damaging protected areas and they know where these areas are.			
3.1 There are effective measures for the prevention, detection, early suppression and control of forest fires. These may make use of the resources of the FMU or contracted services.	3.1.6 All staff have been trained with respect to the importance of preventing forest fires and where relevant in fire fighting. 3.1.7 There are public awareness campaigns to prevent forest fires		
3.2 The control of pathogens and other damaging agents is carried out according to the principles of integrated pest management. Activities are carried out so as to minimize negative environmental impacts.	3.2.1 Control of pathogens in plantations is done using the best management practices available and limits the use of chemicals to situations where no alternatives are economically viable and effective.		
3.3 In forest operations the use of environmentally friendly chemicals will be preferred. Chemicals, fuels, lubricants, other contaminants and their containers are stored, recycled, or disposed of in a safe and environmentally friendly way.	3.3.1 No chemical products and fertilizers will be used of type 1A and 1B of the WHO…* 3.3.5 There are procedures, manuals and plans for the disposition of waste of all types, as well as for the empty boxes of chemical products* 3.3.7 All relevant staff has been trained and has the necessary safety equipment for the use and handling of chemicals.		type 1A and 1B of the WHO
3.4 The control of plantation weeds should be carried out so as to maximize the growth of trees while minimizing the negative effects of the use of herbicides.			
4.1 There is a characterization of the soil types, streams and water resources in the FMU*	4.1.1 There is a mapping of the representative soil types in the FMU, indicating the erosion grade and fragility (including e.g. rainfall, soil characteristics)*		
4.2 The productive capacity of soils is maintained or if necessary restored	4.2.5 Soils with nutrient deficiency during the establishment of the plantation will be restored with appropriate management (there is a system to determine the fertility of the soils)*		
4.3 Forest operations are planned and carried out so as to minimize erosion and the carriage of sediments into watercourses.			
4.4 Chemicals, fuels and lubricants are used in such a way as to prevent pollution of soils and waters.			
4.5 Forest management planning is done considering hydrological availability of significant water flows and water bodies that supply downstream communities.	4.5.3 The company has knowledge of the water resources and rivers present in the FMU.		
4.6 All staff involved in planning and forest operations must have an adequate knowledge about the fragility of soils and the most appropriate management practices for them. They must also demonstrate knowledge of methods for protection of watercourses and of the means of conducting forest operations close to the banks of watercourses.			
5.1 The responsible persons of the FMU know the (possible) impacts of their activities on local communities*	5.1.1 The responsible persons of the FMU have information about the social situation of the local communities (e.g. socio-economic indicators, presence basic services)* 5.1.4 There is a regularly communication and exchange of information between the responsible persons of the FMU and the local communities*		
5.2 Forest managers make contributions towards improving the quality of life of neighboring communities	5.2.4 Local communities have an agreed access to the FMU to collect firewood, mushrooms, herbs and wild fruits, providing these activities do not compromise the management objectives of the plantations 5.2.5 Members of local communities have preference for employment provided that they are equally qualified to other applicants 5.2.6 The visual impact of forestry operations is taken into account in areas close to villages, busy roads, and places of great scenic beauty and especially in areas where tourism is an important activity. 5.2.7 Forest managers contribute to local education programs in themes associated with		

	forestry activities and the environment		
5.3 Forest managers protect local communities against risks associated with forestry operations.	5.3.4 There is a program to inform the public about the dangers of forestry activities and the risks associated with the use of chemicals. 5.3.5 Forest managers have a strategy to protect the lives and property of inhabitants of local communities from the occurrence of fire in the plantations.		
5.4 Forest managers maintain good relationships with the local communities*.	5.4.1 There is a written policy about maintaining good relations with neighboring communities*. 5.4.5 The forest managers respect and protect sites of special interest or of significance for the neighboring communities*.		
5.5 Forest managers regularly make available information about their management practices to interested third parties.	5.5.1 Forest managers are disposed to giving out (non-commercially confidential) information about their forest management practices and their environmental impacts. 5.5.2 Forest managers provide periodic reports regarding the forest management practices.		
6.1 The forest managers identify the presence of indigenous people in the areas where they develop activities and will respect the rights and traditions of indigenous people*.			
6.2 The forest managers are committed to resolve conflicts with indigenous people in the line of mutual respect*.			
6.3 The indigenous people will be adequately compensated for every use of their traditional knowledge related to the management of the forest and the use of specific native species*			
7.1 Forest managers ensure that forest workers are trained so that they can carry out their work in a productive manner and that they also have opportunities for development.			
7.2 Forest managers respect the rights of workers and recognize the benefits of organizing themselves and of collective bargaining	7.2.2 The forest managers recognize the right of their employers to organize themselves and to negotiate individually or in a group (e.g. committee, labour organization)* 7.2.3 Work by persons or minor age is not permitted (<18 years)* 7.2.7 There is no discrimination in contracts, access and wage of employers with similar responsibilities because of gender, age, religion or origin*.		
7.3 Workers receive an adequate and equitable compensation for their work			
7.4 Forest managers safeguard the health and safety of workers.			
7.5 Forest managers provide field workers with adequate transport, accommodation, rest and food.			
8.1 Forest managers know and respect the national legislation applicable to these activities*			
8.2 The forest managers know and respect the International Conventions that the country has acknowledged and take into consideration the relevant ones that do not have that character*.	8.2.1 & 8.2.3 Forest managers know about the implications of CITES and the Convention on Biodiversity in the region and have implemented appropriate control methods to ensure that its clauses are respected. 8.2.2 The forest managers know the implications of the ILO conventions and take appropriate measures to respect the relevant clausules*.		
8.3 All taxes, royalties, honoraria etc will be paid on a regular basis*.			
8.4 The tenure and land use rights and ownership of the forestry resources are clearly defined, documented and legally established*.			
9.2 The FMU must incorporate the results of monitoring in order to continuously improve its forestry operations. The effectiveness and efficiency of the forest management system should be regularly evaluated.			

MTCC: Malaysian Timber Certification Council (forest)

General characteristics:	
Status:	In implementation
Geographical coverage:	Malaysia
Scope:	Timber-products. Timber certification comprises two components; the first is the assessment of forest management practices and the second is product certification or CoC certification [102].
Initiator system:	MTCC started operation of its timber certification scheme in October 2001 using a phased approach [103].

Short summary system or initiative:	Extension system:	
MTCC demonstrates a legal framework in accordance with various laws, policies and regulations of the three regions Sabah, Sarawak and Peninsular Malaysia [12].	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Y
Context:		
MC&I(2002) is based on national and regional legislation and specifically requires conformity to normative regulations. Malaysia has ratified all international environmental conventions but not all the ILO Conventions. Legislation and the MC&I(2002) standard cover substantially the requirements for the missing elements [104].		
Status of system:		
In implementation. The MTCS was endorsed by the PEFC Council as meeting the PEFC Council requirements on 1 May 2009 and the endorsement is valid for a period of five years [79].		
Planned activities:		

Structure system or initiative:	
Juridical basis:	Voluntary
Participation in system:	Despite constitution, decisions are forest and industry driven [12]. Stakeholder participation is addressed. They are invited to regional and national level consultations. The second consultation process took place under the multi-stakeholder National Steering Committee (NSC) [12]. However, balanced participation in the standard setting process is not required [9]. [104] mentions that In future standard development processes it is important to be sensitive also to the minority views to avoid a situation where the applied procedure ignores certain interests.
Local stakeholder involvement	In assessments for forest management certification, local stakeholders in the FMU involved will be interviewed by the assessor [12].
Monitoring performance:	
Chain of custody system	Chain of Custody tracks products from forest to end-consumer. Validity of claims COC-System based on: • a minimum percentage system (70% for solid wood products and 30% for wood fiber based products): In this approach, the total batch of products can be labeled as certified when the amount of certified material in the input batch exceeds the set minimum average threshold; • Input / output system (%): The input/output system means that when a known percentage of certified material (i.e. input batch) enters into processing, the same percentage (on average) of the production (i.e. output batch) is considered to be certified [102]. • or on physical separation system [12]. Each processing facility along the chain, as well as importers and traders, who break up packages and resell goods in different forms/units from what was purchased, must obtain a chain-of-custody certificate until the wood product reaches the final consumer [102]. A label is introduced.
Level of detail CoC system:	<u>Accreditation:</u> MTCS scheme recognizes certifications carried out by certification bodies that have an internationally recognized accreditation based on ISO standards. In Malaysia the recognized accreditation body is Standards Malaysia (SM), which

	is a member of International Accreditation Forum (IAF). SM has developed an accreditation program, based on ISO 170217 standard and is in the process of developing the program based on ISO Guide 658 for CoC verification against PEFC TD Annex 4. The program is foreseen to be finalized by January 2009 [86]. Standard setting process according to ISO Guide 59 [9]. Verification: Certification is implemented with fieldwork by national and local experts. Unsteady visits by assessors during the period of validity. Field visits are required [9]. Certificates are valid for a period of 5 years [12]. Annual monitoring of certified areas is required [9]. The MTCS uses the PEFC International Chain of Custody standard (Annex 4 of the PEFC Technical Document) for the purposes of chain of custody certification [79]. The CoC requires the availability of documentation, records (monthly, e.g. bill of loading) and a system to trace the certified products [102].

Further information on:	
Removal of trade barriers	
Costs:	

List of principles included [103]:	
1	*Compliance with laws and FSC Principles:* Forest management shall respect all applicable laws of the country, in which they occur, and international treaties and agreements to which the country is a signatory, and comply with all FSC Principles and Criteria.
2	*Tenure and Use Rights and Responsibilities:* Long-term tenure and use rights to the land and forest resources shall be clearly defined, documented and legally established.
3	*Indigenous Peoples' Rights:* The legal and customary rights of indigenous peoples to own use and manage their lands, territories, and resources shall be recognized and respected.
4	*Community Relations and Worker's Rights:* Forest management operations shall maintain or enhance the long-term social and economic well-being of forest workers and local communities.
5	*Benefits from the forest:* Forest management operations shall encourage the efficient use of the forest's multiple products and services to ensure economic viability and a wide range of environmental and social benefits.
6	*Environmental Impact:* Forest management shall conserve biological diversity and its associated values, water resources, soils and unique and fragile ecosystems and landscapes, and, by so doing, maintain the ecological functions and the integrity of the forest.
7	*Management Plan:* A management plan – appropriate to the scale and intensity of the operations – shall be written, implemented, and kept up to date. The long term objectives of management, and the means of achieving them, shall be clearly stated.
8	*Monitoring and Assessment:* Monitoring shall be conducted – appropriate to the scale and intensity of forest management – to assess the condition of the forest, yields of forest products, chain of custody, management activities and their social and environmental impacts.
9	*Maintenance of High Conservation Value Forests:* Management activities in high conservation value forests shall maintain or enhance the attributes which define such forests. Decisions regarding high conservation value forests shall always be considered in the context of a precautionary approach.

List of criteria and indicators:

Criteria [103]	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
1.1 Forest management shall respect all national and local laws and administrative requirements.	1. Records and availability of up-to-date relevant national and local laws, and regulations and policies, in particular those related to forest management. 2. Forest managers are knowledgeable of the relevant national and local laws, and the regulatory framework. 3. Record of violations (records of forest offences) and actions taken to address them.		1) Examples for Peninsular Malaysia are (more are listed): • Federal Constitution • National Forestry Policy, 1978 • National Policy on Biological Diversity, 1998 • National Forestry Act, 1984 • State Forest Enactments
1.2 All applicable and legally prescribed fees, royalties, taxes, and other charges shall be paid.	Availability of current list of all legally prescribed fees, royalties, taxes, and other charges. Records are kept of all payments made.		
1.3 In signatory countries, the provisions of all binding international agreements such as CITES, ILO Conventions, ITTA, and Convention on Biological Diversity, shall be respected.	Forest managers are aware of all binding international agreements such as CITES, core ILO Conventions, ITTA, and Convention on Biological Diversity.		Peninsular Malaysia • United Nations Convention on Biological Diversity, 1992 • Convention on Wetlands of International Importance Especially as Waterfowl Habitat, 1971 • International Tropical Timber Agreement, 1994 • United Nations Framework Convention on Climate Change, 1992 • Convention on International Trade in Endangered Species of Wild • Fauna and Flora, 1973 International Labour Organization (ILO) Conventions: Convention No. 87 – The Freedom of Association and Protection of the Right to Organize Convention, 1948 - Articles 2, 3, 5 and 11; Convention No. 98 – The Right to Organize and Collective Bargaining Convention, 1949 - Articles 1 and 2; Convention No. 29 – Forced Labour Convention, 1930; Convention No. 105 – Abolition of Forced Labour Convention, 1957; Convention No. 111 - Discrimination (Employment and Occupation) Convention, 1958 – The Right to Equal Treatment; Convention No. 100 – Equal Remuneration Convention, 1951 - The Right to Equal Pay
1.4 Conflicts between laws, regulations and the FSC Principles and Criteria shall be evaluated for the purposes of certification, on a case by case basis, by the certifiers and the involved or affected parties.	• Availability of documentation of any conflicts between laws, regulations and the FSC Principles and Criteria: For Peninsular Malaysia/Sabah/Sarawak > Records of evaluation of conflicts between laws, regulations and the FSC Principles and Criteria, if any • Forest managers are willing to participate in any process to resolve such conflicts that may arise with the affected parties: Records (minutes, diaries, etc) of forest manager's participation in resolving such conflicts, if any		
1.5Forest management areas should be protected from illegal harvesting, settlement and other unauthorized activities.	• Availability of legal provisions for the establishment and protection of the permanent reserved forest (PRF) for Peninsular Malaysia and forest management areas for Sabah and Sarawak: Compliance with legislation (listed) through records of monitoring • Control of encroachment, illegal harvesting, hunting, and settlement, and other		

	unauthorized activities in managed areas of the PRFs for Peninsular Malaysia and forest management areas for Sabah and Sarawak by forest managers, and forested areas outside the PRFs for Peninsular Malaysia by other regulatory agencies: Compliance with legislation (listed) through records of monitoring		
1.6 Forest managers shall demonstrate a long-term commitment to adhere to the FSC Principles and Criteria	• Availability of policies or statements of commitment to forest management practices consistent with the FSC Principles & Criteria (Records or statements) • Policies or statements are communicated throughout the organization and contractors, and are made available to the public: Records of staff briefings, Contractual agreements and Public summary of policy statement		
2.1 Clear evidence of long-term forest use rights to the land (e.g. land title, customary rights, or leased agreements) shall be demonstrated.	Availability of documentation of legal status, and established forest use rights of the land or forest resources within the relevant national and regional legal frameworks, in the PRFs for Peninsular Malaysia and forest management areas for Sabah and Sarawak. Forest managers should support legally recognized mechanisms for resolving land claims.		
2.2Local communities with legal or customary tenure or use rights shall maintain control, to the extent necessary to protect their rights or resources, over forest operations unless they delegate control with free and informed consent to other agencies.	a) Availability of documentation, if any, of legal or customary tenure or use rights of local communities within relevant national and regional legal frameworks in the PRFs for Peninsular Malaysia and forest management areas for Sabah and Sarawak. b) Forest managers should collaborate with holders of duly recognized legal or customary tenure or use rights within relevant national and regional legal frameworks, in activities that may affect such rights.		a) For peninsular Malaysia: National Forestry Act, 1984 and Aboriginal Peoples Act, 1954
2.3 Appropriate mechanisms shall be employed to resolve disputes over tenure claims and use rights. The circumstances and status of any outstanding disputes will be explicitly considered in the certification evaluation. Disputes of substantial magnitude involving a significant number of interests will normally disqualify an operation from being certified.	• Records of all disputes over tenure and use rights are maintained for areas in the PRFs for Peninsular Malaysia and forest management areas for Sabah and Sarawak. • Availability of appropriate mechanisms to resolve such disputes.		
3.1 Indigenous peoples shall control forest management on their lands and territories unless they delegate control with free and informed consent to other agencies.	• Availability of documentation of the customary rights of indigenous people's lands within relevant national and regional legal frameworks. • Management of such lands is controlled by indigenous people unless they delegate control with free and informed consent to other agencies: Records of delegation of power • Availability of appropriate mechanisms to resolve any conflicts and grievances between parties involved.		
3.2 Forest management shall not threaten or diminish, either directly or indirectly, the resources or tenure rights of indigenous peoples.	Forest management practices in indigenous people's lands recognized within relevant national and regional legal frameworks should not threaten or diminish, either directly or indirectly, their resources or tenure rights.		
3.3 Sites of special cultural, ecological, economic or religious significance to indigenous peoples shall be clearly identified in cooperation with such peoples, and recognized and protected by forest managers.	• Availability of appropriate procedures within current administrative processes for identifying and protecting such sites and provisions for rights of access to these sites by indigenous people within relevant national and state legal frameworks or by mutual agreement: List and maps depicting locations of important cultural, ecological, economic or religious sites in the area to be certified. Records of dialogue and consultation held • Availability of appropriate mechanisms for conflict resolution.		
Indigenous peoples shall be compensated for the application of their traditional knowledge regarding the use of forest species or management systems in forest operations. This compensation shall be formally agreed upon with their free and informed consent before forest operations commence.	• Availability of documentation, if any, of traditional forest-related knowledge and practices of indigenous people in the use of forest species or management systems in forest operations. • Availability of appropriate mechanisms and compensation for the commercial utilization of traditional forest-related knowledge and practices of indigenous people in accordance with existing legislation or by mutual agreement.		
4.1 The communities within, or adjacent to, the forest management area should be given opportunities for employment, training, and other services.	a) Forest managers provide, where appropriate, support for training, retraining, local infrastructure, facilities and social programs commensurate with the scale and intensity of forest management operations.		

	b) Qualified people in communities living within, or adjacent to, the PRFs for Peninsular Malaysia and forest management areas for Sabah and Sarawak are given preference for employment and contract works.		
4.2 Forest management should meet or exceed all applicable laws and/or regulations covering health and safety of employees and their families.	a) Up-to-date information on all applicable laws and/or regulations covering health and safety of forest workers should be disseminated to them. b) Availability of management policies addressing the health and safety of forest workers and their families in accordance with current legislation and/or regulations. c) Appropriate safety and operational equipment in good working condition, including operational procedures, should be made available to forest workers in the work place. d) Forest managers should maintain up-to-date safety records in compliance with all applicable laws and/or regulations covering health and safety of forest workers. e) Demarcation of hazardous areas and provision of guidelines for storage and handling of hazardous materials.		a) e.g. Occupational Safety and Health Act, 1994, • Employees' Social Security Act, 1969, • Workmen's Compensation Act, 1952, • Records of dissemination of health and safety information
4.3 The rights of workers to organize and voluntarily negotiate with their employers shall be guaranteed as outlined in Conventions 87 and 98 of the International Labour Organization (ILO).	a) Provisions for workers to freely organize into Union of their own choice b) Provisions for workers the right to organize and undertake collective bargaining leading to agreements c) Availability of appropriate procedures to address grievances raised by workers and/or their organizations and for conflict resolution.		a) In accordance with ILO Convention No. 87. b) In accordance with ILO Convention No. 98 – The Right to Organise and Collective Bargaining Convention, 1949 - Articles 1 and 2, ILO Convention No. 111 – Discrimination (Employment and Occupation), 1958 – The Right to Equal Treatment, ILO Convention No. 100 – Equal Remuneration, 1951 - The Right to Equal Pay.
4.4 Management planning and operations shall incorporate the results of evaluations of social impact. Consultations shall be maintained with people and groups directly affected by management operations.	• Forest managers should evaluate, through consultations, social impact of forest operations directly affecting communities, and the people and groups directly affected by the forest operations should have access to information on the results of the social impact evaluations. • Forest planning and management practices should consider and incorporate the results of such evaluations.		
4.5 Appropriate mechanisms shall be employed for resolving grievances and for providing fair compensation in the case of loss or damage affecting the legal or customary rights, property, resources, or livelihoods of local peoples. Measures shall be taken to avoid such loss or damage.	• Provisions and measures within relevant national and regional legal frameworks should be taken to prevent loss or damage affecting the local people's legal or customary rights, property, resources, or their livelihoods. • Appropriate mechanisms within relevant national and regional legal frameworks are employed to resolve grievances involving loss or damage affecting the local people's legal or customary rights, property, resources, or their livelihoods, caused by forest operations.		
5.1 Forest management should strive toward economic viability, while taking into account the full environmental, social, and operational costs of production, and ensuring the investments necessary to maintain the ecological productivity of the forest.	• Records of investments and reinvestments made in forest management, including administration, research, human resource development, environmental and social costs in the PRFs for Peninsular Malaysia and forest management areas for Sabah and Sarawak such as protection of biodiversity, environmental mitigation, monitoring and governance including business or development plan, cost benefit analysis, compensation and forgone revenue. • Provisions and management are made to maintain, restore or enhance the productive capacity and ecological integrity of the PRFs for Peninsular Malaysia and forest management areas for Sabah and Sarawak to ensure its economic viability.		
5.2 Forest management and marketing operations should encourage the optimal use and local processing of the forest's diversity of products.	Application of forest management practices to encourage the optimal use of forest resources. Application of marketing operations to encourage local processing and diversifying the mix of commercial products derived from the forest.		
5.3 Forest management should minimize waste associated with harvesting and on-site processing operations and avoid damage to other forest resources.	• Availability and implementation of guidelines for reduced/low impact logging to minimize damage to residual stand. • Application of log extraction operations that minimize product wastage, degrade and		

	foregone revenue opportunities.		
5.4 Forest management should strive to strengthen and diversify the local economy, avoiding dependence on a single forest product.	Application of forest management strategy that encourages the production of a mix of commercial forest products, including the utilization of non-timber forest products, particularly by local community enterprises.		
5.5 Forest management operations shall recognize, maintain, and, where appropriate, enhance the value of forest services and resources such as watersheds and fisheries.	• Availability and implementation of guidelines and/or procedures to identify and demarcate sensitive areas for the protection of soil and water, watercourses and wetlands. • Availability and implementation of management guidelines, where appropriate, to maintain and/or enhance the value of forest services and resources.		
5.6 The rate of harvest of forest products shall not exceed levels which can be permanently sustained.	Rate of harvest shall not be greater than estimated re-growth of the residual stand based on permanent sample plots within a pre-defined cutting cycle. For Peninsular Malaysia: • Annual coupe is calculated based on Net Harvestable Production Area divided by Cutting Cycle Length (ha/yr) • Annual volume removed be less than or equal to Mean Commercial Annual Increment (m3/ha/yr) for regulated forests Records of quantity of timber and important non-timber forest products harvested should be maintained, taking cognizance of their sustainability in the long term.		
6.1 Assessment of environmental impacts shall be completed – appropriate to the scale, intensity of forest management and the uniqueness of the affected resources – and adequately integrate into management systems. Assessments shall include landscape level consideration as well as the impacts of on-site processing facilities. Environmental impacts shall be assessed prior to commencement of site-disturbing operations.	• Assessment of environmental impacts are carried out, including landscape level considerations, as well as the impacts of on-site processing facilities, appropriate to the scale and intensity of forest management, prior to commencement of forest operations in the PRFs for Peninsular Malaysia and forest management areas for Sabah and Sarawak. • Environmental impact assessment should be conducted in the PRFs in accordance with the Environmental Quality Act 1974, taking into consideration the following: conservation of biological diversity and its associated values, water resources, soils and unique and fragile ecosystems and landscapes, as well as the impacts of on-site processing facilities, if present. • Assessment of environmental impacts are carried out, including the potential impacts on endangered, rare and threatened species of flora and fauna, and the need for biological corridors in the PRFs for Peninsular Malaysia and forest management areas for Sabah and Sarawak, appropriate to the scale and intensity of forest management. • Forest management plans should incorporate measures to mitigate the environmental impacts identified in the assessments.		
6.2 Safeguards shall exist which protect rare, threatened and endangered species and their habitats (e.g. nesting and feeding areas). Conservation zones and protection areas shall be established, appropriate to the scale and intensity of forest management and the uniqueness of the affected resources. Inappropriate hunting, fishing, trapping and collection shall be controlled.	• Availability and implementation of guidelines to identify and protect endangered, rare and threatened species of forest flora and fauna, including features of special biological interest such as seed trees, nesting and feeding areas in the PRFs for Peninsular Malaysia and forest management areas for Sabah and Sarawak: state parks and reserves where relevant, buffer strips etc. • Availability and implementation of management guidelines to establish representative conservation and protection areas, in accordance with existing forest ecosystems, appropriate to the scale and intensity of forest management. • Existence of cooperation between forest managers, and conservation organizations and regulatory authorities in implementing conservation and management activities. • Hunting, fishing and collecting activities should be controlled and inappropriate activities prevented in the PRFs for Peninsular Malaysia and forest management areas for Sabah and Sarawak. • Forest workers shall be aware of endangered, rare and threatened species of forest flora and fauna found in the PRFs for Peninsular Malaysia and forest management areas for Sabah and Sarawak. Such awareness shall be promoted among local communities.		
6.3 Ecological functions and values shall be maintained intact, enhanced, or restored, including:	• Availability and implementation of management guidelines to assess post-harvest natural regeneration, and measures to supplement natural regeneration, where		

a) Forest regeneration and succession. b) Genetic, species and ecosystem diversity. c) Natural cycles that affect the productivity of the forest ecosystem.	necessary, in the PRFs for Peninsular Malaysia and forest management areas for Sabah and Sarawak. • Availability and implementation of guidelines for the conservation of genetic, species and ecosystem diversity in the FMU. • Harvesting is designed taking into consideration the need for biological corridors and buffer zones for wildlife.		
6.4 Representative samples of existing ecosystems within the landscape shall be protected in their natural state and recorded on maps, appropriate to the scale and intensity of operations and the uniqueness of the affected resources.	• Representative areas of existing forest ecosystems, appropriate to the scale and intensity of forest management operations, identified and selected under 6.2.2, are demarcated and protected in their natural state. • Implementation of appropriate protection and management activities for these areas.		
6.5 Written guidelines shall be prepared and implemented to: control erosion; minimize forest damage during harvesting, road construction, and all other mechanical disturbances; and protect water resources.	• Availability and implementation of harvesting procedures to protect the soil from compaction by harvesting machinery and erosion during harvesting operations. • Implementation of reduced/low impact logging to minimize damage to the environment. • Availability and implementation of guidelines for forest road lay-out and construction, including log landings and drainage requirements. • Availability and implementation of guidelines for conservation of buffer strips along streams and rivers.		
6.6 Management systems shall promote the development and adoption of environmentally friendly non-chemical methods of pest management and strive to avoid the use of chemical pesticides. WHO Type 1A and 1B and chlorinated hydrocarbon pesticides; pesticides that are persistent, toxic or whose derivatives remain biologically active and accumulate in the food chain beyond their intended use; as well as any pesticides banned by international agreement, shall be prohibited. If chemicals are used, proper equipment and training shall be provided.	• Availability and implementation of guidelines and/or procedures on the use of chemicals in the forest approved by relevant regulatory authorities. • Forest workers should be aware of the procedures on the use of approved chemicals in the forest.		World Health Organization Type 1A and 1B
6.7 Chemicals, containers, liquid and solid non-organic wastes including fuel and oil shall be disposed of in an environmentally appropriate manner at off-site locations.	Non-organic wastes such as oil, tires, containers etc should be recycled, where possible. Containers, liquid and solid non-organic wastes including fuel and oil should be disposed of in an environmentally appropriate and legal manner.		
6.8 Use of biological control agents shall be documented, minimized, monitored and strictly controlled in accordance with national laws and internationally accepted scientific protocols. Use of genetically modified organisms shall be prohibited.	Documentation, monitoring and control of biological control agents in accordance with relevant national and regional laws, and internationally accepted protocols, if such agents are used.		
6.9 The use of exotic species shall be carefully controlled and actively monitored to avoid adverse ecological impacts.	• Evaluation of potential ecological impacts of exotic plant and animal species, if such species are to be used. • Documentation, monitoring and control of exotic plant and animal species, if such species are used.		
6.10 Forest conversion to plantations or non-forest land uses shall not occur, except in circumstances where conversion: a) entails a very limited portion of the forest management unit; and b) does not occur on high conservation value forest areas; and c) will enable clear, substantial, additional, secure, long-term conservation benefits across the forest management unit.	• Conversion of forest area to plantations, consistent with the provisions of relevant national and regional legal frameworks and policies, should provide substantial, additional, secure and long term benefits across the forest management unit. • Conversion of forest area to non-forest land uses, consistent with the provisions of relevant national and regional legal frameworks and policies, should provide higher economic values as compared to its original use, in the overall context of the need for socio-economic development of the country.		
7.1 The management plan and supporting documents shall provide: • Management objectives. • Description of the forest resources to be managed, environmental limitations, land use and ownership status,	Implementation of forest management plan prepared in accordance with existing regional guidelines and relevant provisions listed in Principle #1 covering items in Criterion 7.1.		

socio-economic conditions, and a profile of adjacent lands. • Description of silvicultural and/or other management system, based on the ecology of the forest in question and information gathered through resource inventories. • Rationale for rate of annual harvest and species selection. • Provisions for monitoring of forest growth and dynamics. • Environmental safeguards based on environmental assessments. • Plans for the identification and protection of rare, threatened and endangered species. • Maps describing the forest resource base including protected areas, planned management activities and land ownership. • Description and justification of harvesting techniques and equipment to be used.			
7.2 The management plan shall be periodically revised to incorporate the results of monitoring or new scientific and technical information, as well as to respond to changing environmental, social and economic circumstances.	• Implementation of procedures to periodically revise the forest management plan, incorporating the results of monitoring or new scientific and technical information, the frequency of which should be appropriate to the scale and intensity of forest management operations, so as to respond to changing environmental, social and economic circumstances • Forest managers should be aware of new scientific and technical information pertinent to the management of the area to be certified.		
7.3 Forest workers shall receive adequate training and supervision to ensure proper implementation of the management plan.	• Availability of facilities and programs for training of forest workers for proper implementation of the forest management plan. • Forest workers should be trained as to their respective roles in the implementation of the forest management plan.		
7.4 While respecting the confidentiality of information, forest managers shall make publicly available a summary of the primary elements of the management plan, including those listed in Criterion 7.1.	A summary of the primary elements of the forest management plan as prepared and implemented under Indicator 7.1 should be made available to the public.		
8.1 The frequency and intensity of monitoring should be determined by the scale and intensity of forest management operations as well as the relative complexity and fragility of the affected environment. Monitoring procedures should be consistent and replicable over time to allow comparison of results and assessment of change.	• Forest managers should comply with the regulatory monitoring procedures in accordance with relevant national and regional guidelines of the Forestry Departments and other relevant agencies. • Forest managers should identify and implement appropriate monitoring procedures, in accordance with the scale and intensity of the forest management operations, for assessing social, ecological, environmental and economic impacts.		
8.2 Forest management should include the research and data collection needed to monitor, at a minimum, the following Indicators: a) Yield of all forest products harvested; b) Growth rates, regeneration and condition of the forest; c) Composition and observed changes in the flora and fauna; Environmental and social impacts of harvesting and other operations. e) Costs, productivity, and efficiency of forest management.	Forest managers should gather the relevant information, appropriate to the scale and intensity of the forest management operations, needed to monitor the items (a) to (e) listed in Criterion 8.2: • Results of analysis of growth and yield plots/ growth plots/continuous forest inventory (CFI) plots • Results of pre-felling, post-felling and Virgin Jungle Reserves • inventory analysis • Closing reports and Quarterly progress reports • Wildlife/ biodiversity inventory analysis/ research • Soil and water quality (physical environment) analysis/ research • Social impact analysis/ research/ consultations • Social, environmental and economic cost benefit analysis		
8.3 Documentation shall be provided by the forest manager to	Forest managers should provide relevant documents for identifying all forest products		

enable monitoring and certifying organizations to trace each forest product from its origin, a process known as the "chain of custody".	leaving the area to be certified so that their origin could be easily determined.		
8.4 The results of monitoring shall be incorporated into the implementation and revision of the management plan.	Forest managers should incorporate the results and findings of the monitoring activities into the implementation and revision of the forest management plan.		
8.5 While respecting the confidentiality of information, forest managers shall make publicly available a summary of the results of monitoring indicators, including those listed in Criterion 8.2.	A summary of the results of monitoring indicators, including those listed in Criterion 8.2, should be made available to the public.		
9.1 Assessment to determine the presence of the attributes consistent with High Conservation Value Forests will be completed, appropriate to scale and intensity of forest management.	Forest managers should conduct an assessment of HCVFs in accordance with relevant national and regional legal and regulatory frameworks, appropriate to scale and intensity of forest management operations in the PRFs for Peninsular Malaysia and forest management Areas for Sabah and Sarawak, and in consultation with relevant stakeholders and experts.		
9.2 The consultative portion of the certification process must place emphasis on the identified conservation attributes, and options for the maintenance thereof.	• Forest managers should provide the assessors with a list of relevant stakeholders who have been consulted regarding the HCVFs. • Forest managers should demonstrate that the forest management operations consider and protect areas of high conservation value in the PRFs for Peninsular Malaysia and forest management areas for Sabah and Sarawak.		
9.3 The management plan shall include and implement specific measures that ensure the maintenance and/or enhancement of the applicable conservation attributes consistent with the precautionary approach. These measures shall be specifically included in the publicly available management plan summary.	Measures to demarcate, maintain and/or enhance the HCVF attributes are documented in the forest management plan and effectively implemented. These measures should be included in the forest management plan summary made available to the public.		
9.4 Annual monitoring shall be conducted to assess the effectiveness of the measures employed to maintain or enhance the applicable conservation attributes.	• Forest managers should conduct, appropriate to scale and intensity of forest management • operations, annual monitoring to assess the effectiveness of the measures in the management of the HCVFs in the PRFs for Peninsular Malaysia and forest management • areas for Sabah and Sarawak • Forest managers should incorporate the results and findings of the HCVFs monitoring activities into the implementation and revision of the forest management plan.		

Australian Forestry Certification Standard AFCS (forest)

General characteristics:	
Status:	In implementation
Geographical coverage:	Australia
Scope:	Forest and wood products from native forests and plantations [105]
Initiator system:	The AFCS development process was initiated in December 1999 with the formation of the AFS Steering Committee [106].

Short summary system or initiative:	Extension system:	
The Australian Forestry Standard (AFS) is a nationally endorsed Australian Standard for Sustainable Forest Management.	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Y

Context:
The AFS is developed within the recognized international frameworks of the Montreal Process Criteria and Indicators (1995) and the ISO 14000 series of international, voluntary environmental management Standards, but which takes account of local operating conditions [107]. Forest management plans and codes of forest practice are a fundamental requirement of forest management in Australia on public lands and are required under State legislation. Australia, as a member of the Montreal Process (1995), is committed to implementing criteria and indicators for the sustainable management of forests on all tenures [106].
Status of system:
As at January 2007, 13 major forest managers have AFS certification in Australia, accounting for over 9 million hectares of native forests and plantations on both public and private tenures [105].
Planned activities:
The AFCS 2004 is endorsed by PEFC. The revised AFCS scheme (2008) is undergoing the PEFC re-endorsement process [79].

Structure system or initiative:	
Juridical basis:	Voluntary basis
Participation in system:	Standard setting process conform ISO Guide 59. The scheme does not require participation in the standard setting process [9]. Standard 2008 was prepared by the Australian Forestry Standard Technical Reference Committee [107] comprised of cross-sectoral stakeholders invited and prepared to participate in the development process. Stakeholders (20 in total) included [107]: • independent professional and scientific experts; • forest owners and processors; • community and consumer interests; and • Regulatory or controlling bodies.
Local stakeholder involvement	Criterion 1 requires a consideration of the views of stakeholders when developing the forest management policy. Criterion 2 requires public participation in the forest management [107].
Monitoring performance:	-
Chain of custody system	The AFCS includes a CoC Standard to track forest and wood products through the supply chain [105]. In order to verify the origin of wood or forest products, the organization shall select either an inventory control and accounting of raw material flow option (% based) or a physical separation and/or marking of raw material option (as its preferred Chain of Custody system. AFS has its own logo [108].
Level of detail CoC system:	Accreditation: Accreditation of certification bodies is achieved through the Joint Accreditation System of Australia & New Zealand (JAS-ANZ) [105]. CoC- Accreditation body and Accreditation body conform ISO guide 61 [9]. Audits: Certification of forests under the AFS is carried out by accredited, independent, third party certification bodies [105]. Certification body and CoC- Certification body conform ISO guide 62, 65, 66 [9]. Verification: Evidence for verification may be collected through [106]:

	• Examination of documents, such as management plans, monitoring records or data from surveys; • Observations of on-the-ground practices and conditions in the forest; • Interviews with staff, contractors and interested parties. Information gathered from interviews should be verified by acquiring supporting information from independent sources. For CoC, a documented control system is required. The personnel should cover record keeping, internal audits, and documentation. Surveillance audits of the certified forests and forest management system will be conducted at a frequency no less than once every twelve months. After three years, the certified forest owner/manager must be reassessed [106].

Further information on:	
Removal of trade barriers	
Costs:	

List of principles included:	
1	Criterion 1—Forest management shall be undertaken in a systematic manner that addresses the range of forest values
2	Criterion 2—Forest management shall provide for public participation and foster on-going relationships to be a good neighbour
3	Criterion 3—Forest management shall protect and maintain the biological diversity of forests, including their serial stages, across the regional landscape
4	Criterion 4—Forest management shall maintain the productive capacity of forests
5	Criterion 5—Forest management shall maintain forest ecosystem health and vitality
6	Criterion 6—Forest management shall protect soil and water resources
7	Criterion 7—Forest management shall maintain forests' contribution to carbon cycles
8	Criterion 8—Forest management shall protect and maintain, for Indigenous and non- Indigenous people, their natural, cultural, social, recreational, religious and spiritual heritage values
9	Criterion 9—Forest management shall maintain and enhance long-term social and economic benefits

Australia has ratified six of the seven core ILO Conventions. The ILO 138 Minimum Age for Admission to Employment, 1973 is not ratified. Australia has recognized the following international statements [106]:

- Agenda 21 and the statement of Forest Principles of Rio de Janeiro, 1992
- Commission on Sustainable Development
- Convention on Biological Diversity (Australia ratified in 1993)
- Intergovernmental Panel on Forest and Intergovernmental Forum on Forests
- United Nations Forum in Forest
- Montreal Process Criteria and Indicators
- The United Nation’s Framework Convention on Climate Change the Kyoto Protocol

Criteria	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
1.1 The forest manager shall define a forest management policy that includes a commitment to— a) A systematic approach to forest management, appropriate to the nature, scale and impacts of the forest and forest activities; b) Continual improvement in management performance and forest management outcomes to enhance the quality of the environmental, economic, social, and cultural values of forests and forest resources; c) Compliance with relevant legislation and other requirements to which the forest manager subscribes; d) Provision of resources appropriate to the nature, scale and impacts of the forest and forest activities; e) A process of regular review of forest management; and f) Consideration of the views of stakeholders.			
1.2 The forest manager shall develop a forest management plan, or equivalent instruments, that— a) Identifies applicable legal requirements and other external requirements to which the forest manager subscribes; b) Identifies and assesses the significance of specific aspects and impacts of activities relevant to the full range of forest management performance requirements of this Standard; c) Sets management objectives and targets and establishes a monitoring process for identified significant impacts relevant to the forest management performance requirements of this Standard; and d) Respects stakeholder input provided in accordance with requirement 2.2. e) The forest management plan or equivalent instruments should provide specified contents	e) Plan or instruments should contain: a) Scope and objectives of management; b) Description of the forest estate and values to be managed, including those important for the protection of social benefits; c) Rationale for the annual harvesting rates; d) Description and rationale for silvicultural regimes; e) Reference to relevant operating conditions and controls for specified activities.		
a) 1.3 The forest manager shall implement the management system to meet the forest management performance requirements.	The forest manager shall ensure that— b) Operational plans, procedures, controls and guidelines are in place to achieve the forest management performance requirements; c) Roles and responsibilities are defined and there is capacity to implement the system of management; d) Staff and contractors have an adequate skills base and competencies to achieve the forest management objectives and targets; e) Procedures for communication and documentation are established and maintained; f) Contingency/emergency plans are in place to respond to and manage accidents and emergency situations and that they include the prevention and mitigation of associated environmental impacts and are periodically tested.		
1.4 The forest manager shall monitor and evaluate forest management activities and their outcomes to ensure that forest management performance requirements are met and that deficiencies are corrected (where identified) to support continual improvement in forest management.	The forest manager shall ensure procedures are in place for the following: a) Checking management plans and practices for compliance with legislation, codes of practice, regional and local prescriptions, guidelines and other relevant controls; b) Monitoring and auditing of forest operations for conformance with planned arrangements and to ensure that the forest management performance requirements are met; c) Routine monitoring and evaluation of the outcomes of forest management using a sufficiently powerful approach that allows timely remedial actions to be applied when forest management performance requirements are not met; d) Periodically auditing the forest management system to determine whether or not it conforms to the planned arrangements and has been properly implemented and maintained.		
1.5 The forest manager shall periodically review and, where necessary, modify the	The review shall cover—		

forest management system and its procedures to ensure its continuing suitability, adequacy and effectiveness, and to ensure continual improvement in management performance and forest management outcomes are achieved.	a) The results of auditing and monitoring of forest operations and activities, and other relevant information; b) Monitoring and feedback mechanisms, including the adequacy of monitoring activities; and c) Policy, objective and targets, and changes to other elements of the management system to meet changing circumstances, new information and the commitment to continual improvement. d) The review shall document any improvements to management performance and forest management outcomes.		
2.1 The forest manager shall identify and establish contact with relevant stakeholders, including groups and individuals who have environmental, economic, social or indigenous interests that are directly affected by or with an interest on the management of the defined forest area.			
2.2 The forest manager shall facilitate and encourage meaningful participation of stakeholders in the development of the forest management plans or equivalent instruments. The nature of the stakeholder participation shall be appropriate to the type of forest, the scale of ownership and nature of planned operations.	Participation shall include the following: a) Providing culturally appropriate opportunities for stakeholders to make their views known on important issues related to management of the defined forest area and to influence decision-making in the forest management planning process; b) Explaining how decisions were made, including demonstrating how stakeholders' views were considered and, where relevant, incorporated in the plan; c) Making a summary of the plan or equivalent instrument, reports on its implementation and the results of independent certification and surveillance audit reports publicly available to stakeholders.		
2.3 The forest manager shall foster appropriate relationships in order to be a good neighbour.	Good neighbour considerations shall include— a) Considering the impact of forest operations on neighbours; b) Notifying neighbours that may be directly affected and responsible authorities, where appropriate, before commencing forest operations; c) Taking appropriate actions to minimize any adverse impacts; and d) Employing appropriate mechanisms to resolve disputes and grievances.		
3.1 The forest manager shall actively identify and assess the significance of biological diversity values and structural elements (such as standing and fallen dead wood and hollow bearing trees) to support the maintenance and protection of identified Significant Biological Diversity Values.		Assessing the significance of biological diversity values shall be based on existing relevant knowledge and forest planning instruments, undertaken in a regional context.	For definition Special Biodiversity Values: See Technical Report
3.2 The forest manager shall not convert native vegetation to plantation forest cover or non-forest cover except in the limited circumstances, as follows: a) Infrastructure development either required by legislation or regulation, or ancillary to the approved forest management plan or equivalent instrument under requirement .2, or b) Small-scale clearing (less than10%, up to a limit of 40 hectares on a single FMU) with appropriate offsets. All forest managers must comply with requirement 3.2 as at 31 December 2006	In any of the circumstances, the forest manager shall ensure that the following: 1. Planning (identification and assessment) and practices support the protection and maintenance of Significant Biological Diversity Values and that, as a minimum, conversion occurs only where it does not involve occurrences of— • threatened (including vulnerable, rare or endangered) or regionally significant ecosystems or ecological communities; • old-growth forest; and • important habitat of threatened (including vulnerable, rare or endangered) or regionally significant species 2. No native vegetation community, ecological community or ecosystem becomes depleted, or qualifies as threatened (endangered, vulnerable or rare) in accordance with Commonwealth, State and Territory legislation, regulation or species recovery plans.		
3.3 The forest manager shall implement practices to support the protection and maintenance of Significant Biological Diversity Values likely to be affected by forest operations.			
3.4 The forest manager shall progressively establish and maintain a spatial	The nature of the planned actions shall be appropriate to—		

configuration of forest cover, stand structure elements and growth stages that are intended to support the protection and maintenance of significant biological diversity values.	• The type of forest and the scale of ownership; and • Identified regional and landscape biodiversity priorities.		
3.5 The forest manager shall regenerate native forest with species and provenances native to the area, or from an equivalent locality, as far as reasonably practicable to maintain local gene pools and species mixes.			
3.6 Forest managers managing plantations shall evaluate the impact of introduced species, provenances or populations, and constrain their spread where necessary to protect the ecological integrity of adjacent native vegetation.			
3.7 Forest managers managing native forests shall, where appropriate, use fire and other disturbance regimes that are applicable to the forest type or community to support the protection and maintenance of biological diversity values.			
4.1 The forest manager shall identify existing productive uses of the defined forest area to support the maintenance of the land's long-term productive capacity and ensure it is not compromised by wood production.			
4.2 The forest manager shall plan forest operations to ensure the productive capacity of the land, (see requirement 4.1) is not compromised.	Planning shall consider: • forest growth and forest products yield estimates; • future land use intentions; • rotation/cutting cycle program; • scale, intensity and timing of operations; • expected markets; and • Development and maintenance of infrastructure.		
4.3 The forest manager shall evaluate and use silvicultural systems that have been demonstrated to be appropriate for the forest type, the specific stand and site conditions, forest management objectives and market /product requirements.			
4.4 The forest manager shall ensure that regeneration of native forests and establishment of plantations is effective and timely.			
4.5 The forest manager shall ensure damage to forest growing stock during forest operations stays within tolerable levels, in order to maintain wood quality and promote forest health.			
4.6 The forest manager shall implement effective measures to reduce the extent and impact of unplanned fires.			
5.1 The forest manager shall identify, assess and prioritize any potential damage agents (such as weeds, insect and vertebrate pests and diseases and pathogens) that may impact on forest ecosystem health and vitality.			
5.2 The forest manager shall implement practices to support the maintenance of forest ecosystem health and vitality and ensure that damage stays within tolerable levels.	Management shall include procedures for forest health surveillance and control or eradication of damage agents.		
5.3 Forest managers managing native forests shall use fire and other disturbance regimes to maintain and enhance forest ecosystem health where appropriate to the forest type or scale.			
5.4 The forest manager shall manage forests that have been degraded by damage agents to facilitate their rehabilitation.			
5.5 The forest manager shall reduce reliance on chemicals (including pesticides and fertilizers) with potential for environmental harm and favor alternative cost-effective methods (including safe biological agents) and more benign chemicals that minimize adverse actual and potential impacts on the environment.			
6.1 The forest manager shall identify and assess the inherent soil and water values that can be adversely affected by forest operations in order to maintain the productive and protective functions of the forest.			
6.2 The forest manager shall manage forest operations to minimize adverse changes	With the objective of—		

to water quality (physical, chemical or biological)	• Minimizing transport of soil from disturbed areas into waterways; • Maintaining riparian zones and protective buffer strips; and • Designing, constructing and maintaining temporary and permanent roads and roadway crossings of waterways to recognized standards intended to minimize degradation of water quality.		
6.3 The forest manager shall manage forest operations to ensure hydrological flows are in accordance with authorized regional catchment goals, where they exist. .	Where regional catchment goals do not exist, the forest manager shall liaise with the relevant catchment management authorities and minimize adverse environmental impact of changes in hydrological flows by ensuring that— • Both long-term and short-term disturbances to hydrological flows relative to the existing situation are taken into account; and • The environmental impacts of both increased and reduced hydrological flows are taken into account		
6.4 The forest manager shall manage forest operations to protect and maintain the physical, chemical and biological properties of soil and improve those properties where appropriate and reasonably practicable.	The forest manager shall— • Minimize the extent of land within forest harvesting areas occupied by zones of major soil disturbance; • Ensure that rutting does not exceed that specified in relevant codes and equivalent instruments or operational guidelines; • Promptly rehabilitate extraction tracks, temporary roads and product storage areas; • Minimize any nutrient loss.		
6.5 The forest manager shall manage forest operations to prevent or constrain water pollution and soil contamination, with the objective that— • Chemicals from planned applications are not transported into waterways; 7 • Disposal of waste fuels, lubricants and chemicals is carried out in the prescribed manner.			
7.1 The forest manager shall acknowledge the forests' capacity to act as a net carbon sink and demonstrate a commitment to minimizing greenhouse gas emissions.			
8.1 The forest manager shall recognize the rights and responsibilities of Australia's Indigenous peoples based on their prior ownership of the forests, seas, coasts and waters.	This shall include— • Providing for significant Indigenous input into decision making; • Application of Indigenous peoples' knowledge of sustainable development and management of forests to the management of the defined forest area; • Supporting education and promotion to the wider Australian community of Indigenous peoples' rights and interests in forests as an important part of Australia's national interest; • Support of Indigenous peoples' economic aspirations in sharing benefits from the management of forests and associated environments; • Recognition of Indigenous people's cultural and traditional customs and promote their eco-cultural sustainability.		
8.2 The forest manager shall protect important natural heritage and cultural, religious, spiritual and social heritage values. Forest managers shall safeguard non-Indigenous heritage values through identification of known values.	Protection of Indigenous heritage values shall be undertaken in consultation with relevant Indigenous peoples to avoid damage to important values during forest operations. The assessment of the importance of non-Indigenous heritage values shall be based on relevant studies and forest planning instruments and shall be undertaken in a regional context.		
8.3 The forest manager shall allow exercise of existing legal or traditional uses of the forests to continue.			
9.1 The forest manager shall identify opportunities and implement actions appropriate to support regional industry and regional communities, having due regard to the role of forestry in rural and regional development and the economic, social, environmental and cultural requirements of the AFS.			
9.2 The forest manager shall pursue the efficient and optimal use of harvested forest products to encourage best use of the defined forest area having due regard to the			

economic, social, environmental and cultural requirements of the AFS.			
9.3 The forest manager shall identify opportunities and implement appropriate actions to support employment and skills development of forest workers.			Based on core ILO conventions
9.4 The forest manager shall foster a safe working environment and comply with relevant Occupational Health and Safety (OH&S) employment legislation.			
9.5 The forest manager shall respect the rights of employees and other workers, including their right to join a union or association and to collective bargaining.	The forest manager shall— • Support equal employment opportunities and use qualifications, skill and experience as the basis for recruitment and advancement of staff; • Comply with any collective agreements currently in force; and • Carry out bargaining with workers and their representatives in good faith and with best efforts to reach agreement.		Based on core ILO conventions

Finnish Forest Certification System FFCS (forestry)

General characteristics:	
Status:	In implementation, recognized by PEFC
Geographical coverage:	Finland
Scope:	Forest biomass for industrial and energy use
Initiator system:	Suomen Metsäsertifiointi ry

Short summary system or initiative:	Extension system:	
The scope of the PEFC certification covers all forest-based products – i.e. timber for mechanical and pulping industry, but also wood-based biomass fuels. The requirements for the forest management process are similar regardless of the final product. The recently revised PEFC forest management standard covers – among other topics – also the special questions of energy wood harvesting (Criterion #5 Energy wood is harvested in a sustainable manner). The certification requirements are listed in 29 criteria, which together define the standard for ecologically, socially, culturally and economically sustainable forest management in PEFC certified forests [109].	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Y
Context:		
Criteria and indicators are based on the Finnish legislation which are stated in new standards PEFC FI 1002:2009 and PEFC FI 1003:2009 [109]		
Status of system:		
First implemented in 1999, 13 certificates granted including 310 000 forest owners and almost 21 million hectares. 74 forest companies are certified according to FFCS.		
Planned activities:		
The revised criteria and other system documents will be sent to the international PEFC in October 2009 for evaluation and re-endorsement. The revised standards will be implemented in forest management after the PEFC endorsement and independent certification bodies will assess the conformity to it in the audits of the year 2011 [109].		

Structure system or initiative [109]:	
Juridical basis:	Voluntary
Participation in system:	Multi-stakeholder approach. Key stakeholders involved are mentioned in
Local stakeholder involvement	
Monitoring performance:	
Chain of custody system	Track the wood raw material flows from certified and non-certified forests through the transport and production process and on to the final end-use according standards
Level of detail CoC system:	Third party auditing. PEFC certification in Finland is carried out as regional group certification. “Regional” means that the geographical operating area of a Regional Forestry Centre defines a maximum coverage of one PEFC forest management certificate in Finland. On each of the thirteen Forestry Centre areas the “group” means that all forest owners (owners of private family forests, company, municipality and parish owned forests as well as state owned forests have access to the certification group on voluntary basis. Forestry Centers and other forestry organizations have internal data collection systems to demonstrate and verify the quality of forest management activities on an area of a regional group certificate. Costs of this internal data collection are difficult to measure precisely because these activities are carried out in a decentralized manner by several organizations and because in addition to forest certification the data is used also for other monitoring purposes.

	External third-party audit includes (i) inspection of internal data collecting procedures, (ii) visits to offices of organizations and (iii) sample-based site-level inspections in forests that owned by forest owners that are enrolled as members of regional group certification.

Further information on:	
Removal of trade barriers	-
Costs:	Cost indication for area in Pikanmaa, Finland, FFSC certified, from [69]: Hectares: 860,000 Direct costs, external auditing: 0.02 €/ha per year Direct costs, internal auditing: 0.003 €/ha per year Indirect costs, organizational: 0.02 €/ha per year Indirect costs, loss of stumpage revenues: 1.39 €/ha per year The cost of external audit is in the range of 30 000 to 60 000 € per one region per year. One regional group certificate covers on an average some 1.5 million hectares of forested land. The cost of a surveillance audit is some less because its scope is more limited that in the certification audit. It can be estimated that the coasts of internal data collection are about as big as the costs of external audits.

List of principles included [109]:	
1	Requirements enacted by legislation are complied with
2	Forest stand shall be preserved as a healthy carbon sink
3	Health of the stand shall be attended
4	Finnish native tree species shall be used in forest regeneration
5	Energy wood shall be harvested in a sustainable manner
6	Forest management planning shall promote sustainable use and management of forests
7	Seedling stands shall be tended to safeguard wood production
8	First commercial thinning and delivery logging shall be promoted in order to improve the growing conditions of forest stands in private forests
9	Conservation values of protected areas shall be safeguarded
10	Typical features of valuable habitats shall preserved
11	Peat land nature shall preserved
12	Known habitats of endangered species shall be safeguarded
13	Retention trees and decaying wood shall be left in forest operations
14	Genetically modified seed and plant material shall not be used
15	Forest road plans shall include an environmental impact assessment
16	Biodiversity of nature shall be promoted through controlled use of fire
17	All operations taking place close to watercourses and small water bodies shall safeguard water protection
18	Water protection shall be safeguarded in drainage maintenance sites
19	Quality of groundwater shall be safeguarded in forest operations
20	Forest management shall be implemented only with biodegradable pesticides and herbicides
21	Employees' competence to work shall be safeguarded
22	Work safety, well-being and equal opportunities at work shall be attended
23	Statutory obligations of employers are adhered to
24	Forest owners' know-how shall be improved
25	Knowledge on forests shall be increased among children and adolescents
26	Everyman's rights shall be safeguarded
27	The preconditions for multipurpose use of forests shall be promoted
28	Preconditions for reindeer husbandry shall be safeguarded
29	Preconditions for Sámi culture and for the traditional means of livelihood shall be safeguarded in Sámi homelands in accordance with Sámi definition of sustainable development

List of criteria and indicators [109]:

Criteria	Indicator	Methodology used	Databases used:
1) • Forest management activities shall comply with the forest, environmental and labour legislation in force and the related international agreements that Finland has ratified.	• Forest organizations are obliged to inform when requested by the certification body (external auditor) the court resolutions and authority decisions, of the cases where the activity of forest actor or forest organization has been deemed to breach the forest, environmental or labour legislation during the validity of the certificate		
2) • The level of sustainable allowable cut shall not be exceeded in the (certified) area during the five-year cycle preceding the audit. • The timber volume cut during the five-year cycle can, as a consequence of natural damage, exceed the sustainable allowable cut. • This criterion shall not be used in certification of one or a group of forest management associations.	• The timber volume cut during the five-year cycle shall be compared to the sustainable allowable cut determined by the Finnish Forest Research Institute.		
3) • The spreading of the infection of root rot (Heterobasidion parviporum attacking spruce and Heterobasidion annosum attacking pine) shall be prevented during the harvest of risk sites). The control of root rot shall be done with user-safe methods). • During forest harvest, damages to remaining trees and soil that may deteriorate the growing conditions of the remaining stand shall be avoided. • Measures shall be taken to prevent insect damages in the storage of industrial and energy wood.	• The proportion of control measures of root rot in the harvested area of risk sites shall cover at least 85 %. • The average share of damaged trees in industrial and energy wood thinning shall not exceed 4 % of the number of trees left growing. The share of damaged trees is annually calculated as a five-year period moving average of harvesting trace review results. • In intermediate thinning on mineral soils, the average share of depressed traces9) caused by harvesting machines shall not exceed 4% of the length of the extract traces. The share of depressed trails shall be calculated annually as a five-year period moving average of harvesting trace review results. • Contracting party shall have the guidelines of the pre-cut clearing of the undergrowth that might hamper the harvesting. • The storage of industrial and energy wood shall comply with the Act on Control of Damages Caused by Insects and Fungi (263/1991). A competent authority has not imposed a conditional fine defined in Section 9 nor has pronounced a sentence defined in Section 12 of the Act related to the neglect of control of insects in the interval storage of industrial and energy wood.		
4) Forest regeneration shall be done with tree species native to Finland except for special cases.	A summary of the area regenerated with species other than those native to Finland is calculated annually.		
5) • When removing canopy biomass and stumps from harvested sites the applied methods shall take into consideration the wood production capacity of the site, its biodiversity as well as the aspects related to water protection. • Harvest of energy wood shall not substantially deteriorate the protection values of protected areas or areas belonging to Natura 2000 network nor endanger the preservation of monuments of antiquity specified in the Act on Ancient Monuments (295/1963). • The features of valuable habitats and the known habitats of endangered species shall be safeguarded in harvesting of energy wood. • Peatlands in their natural state shall not be transferred to energy wood cultivations	The organization harvesting energy wood shall have in use guidelines prepared by actors and research bodies operating in the field. The guidelines shall address sustainable harvest of energy wood in final harvesting and thinning sites. The guidelines shall specify, among others: a) the selection criteria for harvest sites b) the minimum target amount of biomass left in the sites of final harvest c) The water protection measures needed. The harvest of energy wood in the area has been done according to the criterion when a) The proportion of sites considered as excellent or good in relation to the above-mentioned evaluation criteria (selection of harvest sites, minimum amount of biomass left in final harvest areas and water protection measures) shall be at least 90 % of the total harvest area based on the results from the monitoring of the quality of nature management; b) The protection values of protected areas defined in Criterion 2.9 have been safeguarded in a manner specified in the criterion; c) The features of valuable habitats defined in Criterion 2.10 have been preserved in a manner specified in the criterion;		

	d) The previously known habitats of endangered species specified have been preserved according to Criterion 2.12; and e) Peatlands that are in their natural state have not been drained for energy wood cultivations.		
6) • The coverage of holding-level forest management plans shall be at least 50% of the total forestry land area of forest holdings or estates exceeding 20 hectares in size. In regional forest management planning, holding-level forest management plans are provided also to the holdings remaining under 20 hectares in size, but paying the annual forestry levy. • The new forest management plans shall include known valuable natural sites and monuments of antiquity in addition to wood production aspects, and the plans shall consider alternative uses of forests according to the management objectives of the forest owner	The area of valid holding-level forest management plans is compared with the corresponding area of forestry land belonging to the total area of forest holdings exceeding 20 hectares in the area		
7) Annually at least 60% of the regional annual tending need of seedling stands shall be completed.	Finnish Forest Research Institute's statistics on tended areas of seedling stands are compared with the estimated tending needs of a similar area as defined in national forest inventory (NFI).		
8) • The action plans to promote first commercial thinning and delivery logging in the area shall be reviewed during the revision of the regional forest programs. • This criterion shall not be used in certification at the level of a forest management association.	The action plans have been reviewed and approved by the regional forest certification committee as part of the regional forest program. Regional certification committees follow the implementation of the program and action plans on a yearly basis.		
9) Conservation value of protected areas or areas belonging to Natura 2000 network shall not be deteriorated by forestry measures.	• Forest authorities and forest organizations operating in the area are aware of the locations of protected areas and areas belonging to Natura 2000 network. Other actors committed to forest certification have the site information as deemed relevant. • Regional environmental authorities have not registered significant deterioration of conservation values of protected areas originating from forestry operations taking place outside protected areas. • Regional environmental authorities have not registered significant deterioration originating from forestry operations of conservation values of Natura 2000 areas. • Forestry operations in Natura areas are bound by the law under which the Natura area is established. In addition, the use and management plan, or equivalent, prepared by an environmental authority together with land owners shall be complied with		
10) Forest management measures shall be planned and carried out respecting the following requirements: a) The forest-covered natural habitat types defined in Section 29 of the Nature Conservation Act (1096/1996) being in their natural state or equivalent to natural state, of which forest owner has been informed by a environmental authority according to Section 30 of the Nature Conservation Act, shall not be altered in such a way that endangers the preservation of their characteristic features. b) The management measures on sites in natural state or equivalent to natural state and habitats of special importance which can be recognized easily from their surroundings and defined in Section 10 of the Forest Act (1093/1996) shall be carried out in such a way that preserves the typical features of these sites. c) In addition, the most important features of the biological diversity in the habitats with high conservation value, listed below, shall be preserved in forest management operations in the majority of the habitat area. Regarding the most typical features the habitats shall be in their natural	The preservation of valuable habitats in forestry operations: a) Court decisions on the cases, where the preservation of characteristic features of the sites based on the Nature Conservation Act, Section 29, have been endangered. b) Court decisions on the cases, where the typical features of habitats of special importance based on the Forest Act, Section10, have not been preserved. In points a) and b) the characteristic features are not preserved according to the criterion if operations carried out violate either on purpose or by negligence the Nature Conservation Act or the Forest Act. Habitats of high conservation value specified in point c) have remained unchanged or nearly unchanged based on the results of the monitoring of the quality of nature management. "Nearly unchanged" means that the most important features to be preserved in the habitats listed in point c) have been preserved in more than 90% of the total area of sites.		

state and be distinctly observable and recognizable in field. *Specific descriptions are provided for point C* The habitats of high conservation value listed in point c), their most important typical features and the measures to be taken for preserving these features are the following: 1. Kettle holes and treeless or sparsely treed sunny eskers 2. Undrained hardwood-spruce swamp - korvet 3. Undrained eutrophic fens 4. Undrained euthrophic fens in the province of Lapland 5. Herb-rich Forests 6. Old-growth forests (definition provided) 7. Alluvial forests and flood meadows in their natural state			
11) The survival of peat land types in their natural state and rare peat land types shall be safeguarded.	First-time draining is not carried out on peat lands in their natural state. Ditch cleaning and supplementary ditching are implemented only in the areas, where ditching has increased significantly the tree growth. The rare peat land types and the possibility of their restoration into a natural state are especially taken into consideration in drainage maintenance as well as in other arrangements related to water table levels.		
12) Forest management procedures shall safeguard the known habitats of strictly protected species, if they are demarcated and informed to the land owner/ manager by the Regional Environment Centre, the known habitats of other endangered species by taking them into consideration according to the site specific instructions of regional environmental authority.	• The habitats of the strictly protected species that the Regional Environment Centre has demarcated and informed to the landowner and/or manager according to Section 47 of the Nature Conservation Act, and the related management guidelines or recommendations provided to the land owner and /or manager. • The site specific guidelines issued by the environmental authority to protect the known habitats of other endangered species have been implemented in harvest and forest management operations		
13) Retention trees and decaying wood shall be left on site in thinning and regeneration harvesting to safeguarding the biodiversity of forest nature	The average number of retention and decaying trees left in forest regeneration sites in the certified area 5 -10 trees per hectare. The importance of retention trees and decaying wood for biodiversity protection is communicated to forest owners and forestry professionals.		
14) Genetically modified material or other material, which is not approved by the authority shall not be used in seeding and planting	Information from the authorities responsible for the enforcement of the Act on Trade of Forest Reproductive Material (241/2002) indicates that gene modified material has not been used in seeding and planting		
15) The plans for new, permanent forest roads drafted by forest organisations1) include a study on environmental values. The forest road network master plan, in which the traffic needs and the environmental impacts have been evaluated, is taken into consideration in construction of new, permanent forest roads.	The environmental impact assessment must include: a) An assessment of the impacts of road construction on the preservation of the characteristic features of the following sites b) An assessment of the impacts of road construction on water ecosystems in the area of impact and the necessary water protection measures.		
16) • The habitats of species dependent on forest fires shall be maintained through prescribed rehabilitation burnings. • Forest owners shall be informed on the opportunities for prescribed burning. • This criterion shall not be applied in the Åland Province.	• The annual area and number of prescribed rehabilitation burnings in the certified area reaches at least, the average annual level of the burnings during the past five-year period. • In case weather conditions for prescribed burning have been unexceptionally unfavourable, this will be taken into consideration when estimating the conformity to the required level of prescribed burnings. • Forestry organizations have informed forest owners about prescribed burning as a measure to safeguard biodiversity in forests and on the opportunity to receive state financial support for prescribed burning		
17) • A buffer-zone is left along watercourses and small water bodies for capturing solid and nutrient run-off. • Tree harvesting is allowed on buffer-zones, but retention trees as defined in the criterion 2.13, must not be removed. Seedling and sapling stand tending works are allowed on buffer-zones.	Buffer-zone is considered to be preserved as required by the criterion when the soil is undisturbed on over 90 per cent of a buffer-zone with a minimum width of 5 meters.		

• Soil scarification for regeneration, fertilization, stump removal, clearing of coppice layer or use of pesticides or herbicides shall not take place on buffer-zones. Canopy biomass is removed from buffer-zones, if possible			
18) Forest organizations' plans for drainage maintenance shall include a water protection plan. The planned water protection measures shall be implemented as appropriate.	Guidelines for planning of drainage maintenance require the elaboration of a water protection plan. The water protection plan contains a.o.: • impacts of the measures related to ditch cleaning and supplementary ditching on the water levels of watercourses; • consideration of valuable habitats as defined in the criterion 2.10 and consideration of peat land habitats that are rare and that have become rare as defined in the criterion 2.11; • Risks for erosion in ditch cleaning and supplementary ditching; slope if the terrain and water conduct away from ditch cleaning and supplementary ditching area; and water protection measures and their extent. Adequate information on plans for water protection have, if needed, been delivered to regional environmental authority for its possible statement.		
19) • Chemical pesticides shall not be used in groundwater areas that are important (Class 1) or suitable (Class 2) sources of water supply. • Fertilizers shall not be used in groundwater areas that are important (Class 1) sources of water supply. • Stumps shall not be removed in Class I groundwater areas.	• The forest organisations1) use or have access to the information on the locations of the groundwater areas that are important (Class 1) and suitable (Class 2) sources of water supply. • The restrictions on the use of pesticides and herbicides as well as fertilizers have been taken into consideration in the working instructions and recommendations of forest organizations. • The monitoring of the quality of nature management has not encountered stump removal in Class I groundwater areas.		
20) • Only biodegradable pesticides and herbicides shall be used in forest management and wood harvesting. • Broad-leaved coppice shall not be treated, in forest regeneration areas or in seedling and sapling stands with chemical foliage sprays, unless it is required to control the fungal diseases infecting young Scots pine stands from aspen coppice. • No chemical pesticides or herbicides shall be used in valuable habitats defined in Criterion 2.10. • Chemical pesticides or herbicides shall be used only when unavoidable as, for instance, for the control of ground vegetation on forest regeneration areas, for stump treatment of broadleaved trees and for controlling the pine weevil and for treatment of coniferous timber storages in the vicinity of forest areas to prevent spreading of insect damages into the forests. • The use of control agents in stump management for prevention the spreading of root rot is allowed in general but not in the valuable habitats specified in Criterion 2.10. Pesticides and herbicides are used in conformity to the official guidelines.	The guidelines and instructions of forest organizations include the recommended use of chemical pesticides and herbicides in different forestry operations.		
21) Employees' adequate professional competence shall be ensured.	• Employer shall have a document or another piece of evidence which indicates that employer has been assured on the required and adequate professional competence of the employee for the task needed, and that the employer has taken care of the capacity building during the employment. • Contracting party shall have a procedure to ensure that his employees have an adequate professional competence and ability to work in each designated task. • Contractors/employees shall have access to the general guidelines needed in the work. • Contractors/employees shall be given site specific, task related guidelines that include quality, environmental and other requirements.		
22) Contractors and employees shall be are provided with the means for safe and a high quality work	Employer shall make sure that • contractor/employee has the general safety guidelines related to the work in use;		

	• contractor/employee is aware of the aspects and field sites possibly endangering the work safety at a work site; • the guidelines related to work are given in the language the worker understands and • when needed, a worker has an access to a person who speaks a common language and can interpret in work related issues; Employer has documents on the first and check-up examinations as stipulated in the Act on Occupational Health Service (1383/2001) in organization's occupational health and safety documentation. Activities appropriate to the conditions and aiming at maintaining the ability to work, are arranged in forest organizations employing at least 10 employees		
23) • Employers and contracting parties shall comply with labor/ employment legislation, collective labor agreements and legislation in force on employment of foreign labour and require also the compliance from their sub-contractors and companies renting workers to work for third parties. • Employers and contracting parties shall provide local shop stewards with the information requested in the Act on the Contractor's Obligations and Liability when Work is Contracted Out • Employers and contracting parties shall pay taxes, social security fees and employment pension fees and shall expect their sub-contractors to do the same.	• Employer is aware of the binding regulations in collective agreements, labor and employment legislation and legislation on the use of foreign labor when relevant. Employer has procedures that ensure the conformity to the legislation in force • Employee and employer organizations are requested to give statements on possible regional violations of collective labour agreements55) or on the above mentioned legislation. • Contracting parties shall have guidelines on service contracting and documents providing evidence that they have annually verified that their sub-contractors belong to the prepayment register. Contractors shall also have documents on paid taxes and employment pension fees of their subcontractors. • Employers/contracting parties shall make the contract or work agreements in a written form and file them. • Employers/contracting parties have a register on those subcontractors they have purchased forestry services. • Contracting parties inform their subcontractors on the significant bans in contract work or production decreases they are aware of. The information is given early enough before the initiation of the work.		
24) The number of persons participating in supplementary training, personal or group information sessions, intended for the region's forest owners shall be equivalent to at least 20% of the total number of forest owners in the region.	• Statistics on training sessions, personal and group guidance organized for local forest owners by the regional forestry centre, forest management associations, forest owners' union, forest industry companies as well as forestry colleges. • The statistics must include the number of participants in trainings and extensions.		
25) There shall be an up-to-date action program to promote the forest based knowledge among children and adolescents in the region. The criterion is not applicable in the certification at the level of a forest management association	On the initiative of regional forestry centre the significant forestry organisations62) in the region review together with the forestry sector youth and training organizations the action program within a year from the issuance of the certificate. Cooperation with other interested and locally operating parties is sought in the implementation of the action program. *Contents required for action plan are defined*		
26) Opportunities for free access to and stay in forests and for picking of forest products according to everyman's rights shall be safeguarded.	There is not a significant amount of verified unjustified restrictions on the everyman's rights.		
27) Accessibility on recreational trails, possibilities for hunting and game management and agreement based collection of organic forest products shall be enhanced in order to safeguard the preconditions for multiple use of forests.	• No soil scarification or stump removal shall take place on recreational trails. Canopy biomass shall not be left on the trails. Any permanent constructions on the trails shall be safeguarded in forestry operations. When the monitoring of the quality of nature management indicates that 90 per cent of the trail length is intact (in forestry operations), the accessibility on the trails is taken into consideration as required by the criterion. • Forestry organizations inform forest owners on the significance of hunting and game management in protecting seedling and sapling stands from game damages and in safeguarding biodiversity in forests. Forestry and hunting organizations give additional information on integration of game management into forest management planning and forest use. • Information on the use of fertilizers, pesticides and herbicides required in collection of organic products is available for those estates where forest owners or the person he/she has authorized have made an agreement on the compliance with the guidelines for production of organic products.		

28) Forest management activities in the state forests, under the administration of Metsähallitus, and reindeer husbandry shall be integrated in a local level cooperation so that the conditions for reindeer husbandry are safeguarded in forest management activities on a broad and long-term basis in the region designated for reindeer herding.	To reach this target Metsähallitus should cooperate with the representatives of reindeer husbandry when carrying out such activities that might have a significant impact on reindeer herding. The significant activities and need for cooperation shall be determined in cooperation so that the target will be achieved. The cooperation observes the Agreement67) signed 27 February 2002 by Metsähallitus and the Reindeer Herders' Association as well as the sections of Metsähallitus natural resources planning addressing the integration of forestry and reindeer husbandry.		
29) In the Sámi homelands the management and use of areas and natural resources administered by the State shall be organized in such a way that they ensure the facilities for Sámi culture and traditional livelihoods.	1) In the management of state forests the compliance to international laws, article 8j in Biodiversity Convention and the rights of Sámi as defined in the Constitution as well as the engagement of Sámi Parliament in preparation and decisions on the issue. 2) Sámi cultural landscapes and heritage sites are taken into consideration and protected in forestry operation consulting the Sámi Parliament and Skolt Council in the region of skolt people. 3) Sámi Parliament and Skolt Council negotiate on the nature resource plans and the level of sustainable allowable cut is negotiated. Local natural conditions and Sámi culture and livelihoods are taken into consideration when defining the level of the allowable cut. Nature resource plans include measures to implement sustainable development, the proposals of Sámi and how these are taken into consideration in the plan. The levels of allowable cut, and harvesting plans are calculated and reviewed at the levels of reindeer herding cooperatives and municipalities. 4) The interests of reindeer herding are integrated in forest use according to the consultations with Sámi Parliament, reindeer herding associations and their siidas/ local units of reindeer herding cooperatives. Harvesting operations shall not cause significant harm to reindeer herding. Soil scarification is not applied on dry heath types or barren heath type soils. On other lichen pastures soil scarification is avoided when possible and the lightest measures possible complying with the Forest Act are used. The forest management regimes applied are defined in negotiations between Sámi Parliament, Skolt Council and Metsähallitus. 5) Manager of state forests makes the forest management plans in Sámi Homeland. The plans include the most important horse hair lichen and lichen pasture lands of reindeer herding cooperatives and their local units as well as relevant trails and constructions. 6) The manager of state forests maintains reindeer maps and statistics on lichen lands by herding cooperatives and develop reporting on other areas important for Sámi reindeer herding. 7) Environmental impact assessment of forest road construction includes in Sámi Homeland an estimate on the impacts of construction to Sámi culture and traditional livelihoods. Construction of forest roads on Sámi Homeland shall be integrated with the interests of Sámi culture, livelihoods and nature values as consulted with Sámi Parliament, and in skolt region with Skolt Council. 8) Manager of state forests shall not prevent reindeer herding in Sámi area by fencing if reindeer herding cooperative has not given its consent on fencing. 9) Travel expenses are compensated to the representatives of Sámi Parliament and Skolt Council and to the reindeer herders that participate in the preparation of nature resource plans or plans for reindeer herding cooperatives. 10) Sámi Parliament and Skolt Council shall be always consulted in forest certification audits		

IFOAM: International Federation of Organic Agriculture Movements (organic agriculture, umbrella organization)

General characteristics:	
Status:	In implementation
Geographical coverage:	Worldwide
Scope:	Organic agriculture – agriculture products
Initiator system:	President of the French farmers' organization, Nature et Progrès and five organizations from Europe, south-Africa and the USA.

Short summary system or initiative:	Extension system:	
International Federation of Organic Agriculture Movements (IFOAM) is the worldwide umbrella organization for organic organizations. IFOAM is a Meta-Standard by itself as it focuses on accrediting other standards for organic agriculture according to the general criteria set out by IFOAM [8].	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Y
Context:		
-		
Status of system:		
IFOAM unites more than 750 member organizations in 108 countries. Currently, IFOAM has accredited 33 organic standards over the world for a variety of crops [8].		
Planned activities:		
The IFOAM World Board identified six goals for the Program 2011 [110]: 1. Be the international authority and most effective voice on all matters organic 2. Increase market share for organic products; access to them at local, regional and international levels 3. Enhance capacity of the organic sector to sustain growth and development 4. Strengthen IFOAM as a democratic global action network 5. Create “think spaces” to cultivate the organic future 6. Ensure an effectively managed organization with sufficient and sustainable resources The development of a Participatory Guarantee Systems (PGS) is ongoing. The Terms of Reference for the System Setting committee is available in June 2009 [111].		

Structure system or initiative:	
Juridical basis:	Voluntary
Participation in system:	IFOAM members are organizations and companies of the ecological agriculture and the ecological food industry (fabricators, advisors, research establishments, etc.). The members can organize itself to regional groups or stakeholders. A draft document for stakeholder participation is available [12]. IFOAM is comprised of a variety of committees each with specific mandates. The IFOAM General Assembly is the main decision-making body. Members elect the World Board for a 3 year term. The World Board appoints members to official committees, working groups and task forces based upon the recommendation of IFOAM membership, and IFOAM member organizations also establish regional groups and sector specific interest groups [15].
Local stakeholder involvement	Is addressed, stakeholders can allude certifier to any mistakes and problems. Certifier will check this with an unannounced inspection [12]. The development of a Participatory Guarantee Systems (PGS) is ongoing. The Terms of Reference for the System Setting committee is available in June 2009 [111]. Recommendations for inspection of social standards are developed including guidelines for stakeholder consultation [112],
Monitoring performance:	Verification bodies are annually inspected.
Chain of custody system	The routine inspection procedure shall be documented and shall at least include an input/output reconciliation and trace back audit which attempts to trace finished product back to incoming ingredients or fields of production in processing and handling. Product labels should identify all ingredients, processing methods, and all additives and processing aids [12]
Level of detail (CoC) system:	Accreditation The IFOAM Accreditation Program is a service within the IFOAM Organic Guarantee System that is offered to certification bodies. The IFOAM Basic

	Standards along with the IFOAM Accreditation Criteria (together called The IFOAM Norms) establish the requirements for certification bodies seeking IFOAM accreditation. IFOAM accreditation is awarded to certification bodies that use certification standards that meet the IFOAM Basic Standards. Additionally, the certification body itself must demonstrate compliance with the IFOAM Accreditation Criteria, which are requirements for how certification is conducted [15]. Accreditation complies with ISO 65 (EN 45011) [8]. Auditor verification Auditor competency complies with ISO19011. Uses risk based auditing to allow surveillance of high risk farms [8]. Verification: The routine visit procedure includes verification of the most recent information, review of records, interviews, an input/output reconciliation and trace back audit, production/sales reconciliation on farms, assessment of production and processing systems and residue sampling. Inspections are made annually or at a frequency determined on a case-by-case basis providing that the certification body documents the reasons for the reduced frequency [113]. On-site visits to producers are not required to be annual if the certifier uses a risk based approach. In practice though all organic producers are visited at least once per year due to requirements of the major regulations being annual. With regards to the certificate validity, IFOAM norms again do not specify (just that the certificate should indicate validity). In practice validity is 12 months to 15 months for most certifiers, the extra 3 months allowing time for reinspection and the processing of the report and decision-making. Most certifiers will issue a certificate annually when the inspection and certification process for that year is finalized [114].

Further information on:	
Removal of trade barriers	A professional body within IFOAM is the IFOAM Organic Trade Forum (OTF). The main mission of OTF is to organize traders of organic products – to create an IFOAM business network. OTF Initiatives [110]: • Develop organic trade • Improve business to business communication • Encourage ethical business practices • Attract more member partners to IFOAM by developing trade member benefits • Establish a forum for further discussions
Costs:	Yearly fee between $220 and $2750 for companies between $115,160 and 3,450,000 annual turnovers. For companies over $3,450,000 annual turnover yearly fee is $3850 Allows group certification [8].

The principles listed are the IFOAM Basic Standards. They provide a framework for certification bodies and standard setting organizations to develop their own certification standards and cannot be used for certification on their own. Certification standards should take into account local conditions [113].

List of principles included [113]:	
1	Organic farming benefits the quality of ecosystems
2	Organic farming methods conserve and grow soil, maintain water quality and use water efficiently and responsibly.
3	Genetic engineering is excluded from organic production and processing.
4	Organic management sustains and prevents degradation of common biotic and abiotic resources, including areas used for rangeland, fisheries, forests, and forage for bees, as well as neighboring land, air, and water.
5	Organic agriculture develops a viable and sustainable agro-ecosystem, by working compatibly with natural living systems and cycles.
6	The whole farm, including livestock, is converted to organic management practices according to the standards over a period of time.
7	Organic production systems require an ongoing commitment to organic production practices.
8	Species and varieties cultivated in organic agriculture systems are selected for adaptability to the local soil and climatic conditions and tolerance to pests and diseases. All seeds and plant material are certified organic.
9	A conversion period enables the establishment of an organic management system and builds soil fertility.
10	Soil and soil management is the foundation of organic production. Organic growing systems are soil based, care for the soil and surrounding ecosystems and provide support for a diversity of species, while encouraging nutrient cycling and mitigating soil and nutrient losses.
11	Organic farming returns microbial plant or animal material to the soil to increase or at least maintain its fertility and biological activity.
12	Organic farming systems apply biological and cultural means to prevent unacceptable losses from pests, diseases and weeds. They use crops and varieties that are well-adapted to the environment and a balanced fertility program to maintain fertile soils with high biological activity, locally adapted rotations, companion planting, green manures,

	and other recognized organic practices as described in these standards. Growth and development should take place in a natural manner.
13	All relevant measures are taken to ensure that organic soil and food is protected from contamination.
Principles specified for animal husbandry and bees keeping are not listed here.	
14	Organic processing and handling provides consumers with nutritious, high quality supplies of organic products and organic farmers with a market without compromise to the organic integrity of their products.
15	Organic processed products are only made from organic ingredients.
16	Organic food is processed by biological, mechanical and physical methods in a way that maintains the vital quality of each ingredient and the finished product.
17	Organic food is protected from pests and diseases by the use of good manufacturing practices that include proper cleaning, sanitation and hygiene, without the use of chemical treatment or irradiation
18	Organic product packaging has minimal adverse impacts on the product or on the environment.
19	Organic foods are safe, of high quality, and free of substances used to clean, disinfect, and sanitize food processing facilities.
20	Organic products are clearly and accurately labeled as organic.
21	Social justice and social rights are an integral part of organic agriculture and processing.
Principles on Textile fiber processing and aquaculture or aquatic nutrition are not listed	

Note: The IFOAM Basic standards provide – beside the minimum requirements (listed here as criteria) – also recommendations. Recommendations are not listed in this table.

Criteria [113]:	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
1a. Operators shall take measures to maintain and improve landscape and enhance biodiversity quality. 1b. Clearing of primary ecosystems is prohibited.			
2a. All operators shall take defined and appropriate measures to prevent erosion. 2b. Land preparation by burning vegetation shall be restricted to the minimum. 2c. Crop production, processing and handling systems shall return nutrients, organic matter and other resources removed from the soil through harvesting by the recycling, regeneration and addition of organic materials and nutrients. 2d. Grazing management shall not degrade land or pollute water resources. 2e. Relevant measures shall be taken to prevent or remedy soil and water salinization. 2f. Operators shall not deplete nor excessively exploit water resources, and shall seek to preserve water quality. They shall where possible recycle rainwater and monitor water extraction.			
3a. The deliberate use or negligent introduction of genetically engineered organisms or their derivatives to organic farming systems or products is prohibited. 3b. The use of genetically engineered organisms or their derivatives is prohibited. 3c. The use of genetically engineered seeds, pollen, transgene plants or plant material is not allowed. 3d. Organic processed products shall not use ingredients, additives or processing aids derived from GMOs. 3e. Inputs, processing aids and ingredients shall be traced back one step in the biological chain to the direct source organism *(see definition) from which they are produced to verify that they are not derived from GMOs. 3f. Contamination of organic product by GMOs that result from circumstances beyond the control of the operator may alter the organic status of the operation and/or product. 3g. On farms with split (including parallel) production, the use of genetically engineered organisms is not permitted in any production activity on the farm.	3a. This includes animals, seed, propagation material, and farm inputs such as fertilizers, soil conditioners, vaccines or crop protection materials. 3b. This shall include animals, seed and farm inputs such as fertilizers, soil conditioners, vaccines or crop protection materials.		
4a. Wild harvested products shall only be certified organic if they are derived from a stable and sustainable growing environment. The people who harvest, gather, or wildcraft shall not take any products at a rate that exceeds the sustainable yield of the ecosystem, or threaten the existence of plant, fungal or animal species, including those not directly exploited. 4b. Operators shall harvest products only from a clearly defined area where prohibited substances have not been applied. 4c. The collection or harvest area shall be at an appropriate distance from conventional farming, pollution and contamination. 4d. The operator who manages the harvesting or gathering of common resource products shall be familiar with the defined collecting or harvesting area. 4e. Operators shall take measures to ensure that wild, sedentary aquatic species are collected only from areas where the water is not contaminated by substances prohibited in these standards.			

5a. There shall be a period of organic management, meeting all the requirements of these standards, before the resulting product may be considered as organic. 5b. The start of the conversion period shall be calculated from the date of application to the certification body or, alternatively, from the date of the last application of unapproved inputs.	5b. Provided that the operator can demonstrate that the full standards requirements have been met for at least the minimum period stated in sections 4.2 and 5.2. Calculation of the conversion period may not start before the date of the last non-compliant input or practice. For the length of conversion periods, refer to sections 4.2 and 5.2.		
6a. If the whole farm is not converted (split production) the organic and conventional parts of the farm shall be clearly and continuously separated. 6b. Simultaneous production of the same organic and non-organic crops or animal products (parallel production) is only permitted where such production is undertaken in a way that allows clear and continuous separation of all products claimed as certified or certifiable as organic. 6c. Prohibited materials shall be stored in separate locations from those where organic products are handled.			
7a. The operator shall demonstrate that a production system does not rely upon continuous switching between organic and conventional management.			
8a. Seed and plant materials shall be propagated under organic management one generation, in the case of annuals, and for perennials, two growing periods, or 12 months, which ever is the longer, before being certified as organic seed and plant material. 8b. Operators shall use organic seed and plant material of appropriate varieties and quality.	8b. When organic seed and plant materials are not available, conventional materials may be used provided that they have not been treated with pesticides not otherwise permitted by these standards. To promote and establish use of organic seed and plant material, standard setting organizations shall set appropriate standards and/or time limits for the selected use of non-organic seed and plant material. Where untreated conventional seeds and plant materials are not available, chemically treated seed + plant material may be used. The certification body shall establish time limits and conditions for exemptions that permit use of chemically treated seeds + plant materials.		
9a. Plant products from annual production shall only be considered organic when a conversion period of at least 12 months has elapsed prior to the start of the production cycle. In the case of perennials (excluding pastures and meadows) a period of at least 18 months prior to harvest shall be required. 9b. There shall be at least a 12-month conversion period prior to pastures, meadows and products harvested there from, being considered organic. 9c. The conversion period may be extended by the standard-setting organization depending on conditions such as past use of the land, management capacity of the operator and environmental factors. 9d. Where conversion periods exceeding those stated in 4.2.1 are required, and labeling of product as “produce of organic agriculture in the process of conversion” or a similar description is permitted, the standards requirements shall have been met for at least 12 months prior to such labeling.			
10a. Diversity in plant production and activity shall be assured by minimum crop rotation requirements and/or variety of plantings. 10b. For perennial crops, the certifying body shall set minimum standards for orchard/ plantation floor cover and/or diversity or refuge plantings in the orchard.	10a. Minimum rotation practices for annual crops shall be established unless the operator demonstrates diversity in plant production by other means. Operators are required to manage pressure from insects, weeds, diseases and other pests, while maintaining or increasing soil organic matter, fertility, microbial activity and general soil health.		
11a. Material of microbial, plant or animal origin shall form the basis of the fertility program. 11b. Nutrients and fertility products shall be applied in a way that protects soil, water, and biodiversity. Restrictions may be based on amounts, location, timing, treatments, methods or choice of inputs applied. 11c. Material applied to the land or crop shall be in accordance with list mentioned in appendix. 11d. Manures containing human excrement (feces and urine) are prohibited			

for use on crops for human consumption. 11e. Mineral fertilizers shall only be used in a program addressing long-term fertility needs together with other techniques such as organic matter additions, green manures, rotations and nitrogen fixation by plants. 11f. Mineral fertilizers shall be applied in the form in which they are naturally composed and extracted and shall not be rendered more soluble by chemical treatment, other than addition of water and mixing with other naturally occurring, permitted inputs. 11g. Chilean nitrate and all synthetic nitrogenous fertilizers, including urea, are prohibited.			
12a. All organic production systems shall display a set of positive processes/mechanisms capable of accounting for management of significant pests, weeds and diseases under normal circumstances. 12b. Pest, disease and weed management products that are prepared at the farm from local plants, animals and micro-organisms, are permitted when the measures in 12a are not sufficient. 12c. Physical methods for pest, disease and weed management are permitted, including the application of heat. Thermal sterilization of soils to combat pests and diseases is restricted. 12d. The standard-setting organization shall establish standards or criteria for all soil sterilization methods that are considered consistent with Appendices 1 and 3. 12e. Any input applied for plant pest, disease, weed, or growth management shall appear in Appendix 3 subject to the limitations of that appendix. 12f. Any formulated input shall have only active ingredients listed in Appendix 3.	12b. If the ecosystem or the quality of organic products might be jeopardized, the criteria in Appendix and other relevant criteria shall be used to establish whether the product is acceptable. 12f. All other ingredients shall not be carcinogens, teratogens, mutagens, or neurotoxins. Appendix 1 provides criteria for the evaluation of inputs, additives and processing aids for organic production and processing. Appendix 3 provides a table listing crop protectants and regulators and conditions for use.		
13a. The operator shall employ measures including barriers and buffer zones to avoid potential contamination and limit contaminants in organic products. 13b. In case of a reasonable suspicion of contamination, the certification body shall ensure that an analysis of the relevant products and possible sources of pollution (soil, water, air and inputs) is undertaken. 13c. For synthetic structure coverings, mulches, fleeces, insect netting and silage wrapping, only products based on polyethylene and polypropylene or other polycarbonates are permitted. These shall be removed from the soil after use and shall not be burned on the farmland. 13d. All equipment from conventional farming systems shall be thoroughly cleaned of potentially contaminating materials before being used on organically managed areas.	13b. Objective: to determine the level of contamination and shall make the appropriate responses, such as detection of contamination sources, considering background contamination and other relevant factors.		
14a. Handlers and processors shall not co-mingle organic products with non-organic products. 14b. All organic products shall be clearly identified as such, and stored and transported in a way that prevents contact with conventional product through the entire process. 14c. The handler and processor shall take all necessary measures to prevent organic products from being contaminated by pollutants and contaminants, including the cleaning, decontamination, or if necessary disinfection of facilities and equipment.			
15a. All ingredients used in an organic processed product shall be organically produced except for those additives and processing aids that appear in Appendix 4 and non-organically produced ingredients that are in compliance with the labeling provisions. 15b. Water and salt may be used as ingredients in the production of organic	15a. In cases where an ingredient of organic origin is unavailable in sufficient quality or quantity, the standard-setting organization may authorize use of non-organic raw materials subject to periodic review and re-evaluation. These materials shall not be genetically engineered.		

products and are not included in the percentage calculations of organic ingredients. 15c. Minerals (including trace elements), vitamins and similar isolated ingredients shall not be used unless their use is legally required or where severe dietary or nutritional deficiency can be demonstrated. 15d. Preparations of micro-organisms and enzymes commonly used in food processing may be used, with the exception of genetically engineered micro-organisms and their products.	15d.Processors shall use micro-organisms grown on substrates that consist entirely of organic ingredients and substances on Appendix 4, if available. This includes cultures that are prepared or multiplied in-house.		
16a. Techniques used to process organic food shall be biological, physical, and mechanical in nature. Any additives, processing aids, or other materials that chemically react with or modify organic food shall be restricted and must appear in Appendix 4. 16b. Extraction shall only take place with water, ethanol, plant and animal oils, vinegar, carbon dioxide, and nitrogen. These shall be of a quality appropriate for their purpose. 16c. Irradiation is not permitted. 16d. Filtration equipment shall not contain asbestos, or utilize techniques or substances that may negatively affect the product. 16e. Defined following conditions of storage are permitted (for allowed substances in these conditions, see Appendix 4): 16f. Ethylene gas is permitted for ripening.	16e. These are: a. controlled atmosphere; b. temperature control; c.drying; d. humidity regulation.		
17a. A handler or processor is required to manage pests and shall use the following methods according to defined priorities. 17b. Prohibited pest control practices include, but are not limited to, the following substances and methods: 17c. The direct use or application of a prohibited method or material renders that product no longer organic. The operator shall take necessary precautions to prevent contamination, including the removal of organic product from the storage or processing facility, and measures to decontaminate the equipment or facilities.	Note on 17a. Priorities are: a. preventative methods such as disruption, elimination of habitat and access to facilities; b. mechanical, physical and biological methods; c. substances according to the Appendices of the IFOAM Basic standards; D. substances (other than pesticides) used in traps. 17b. Substances and methods are: a. pesticides not contained in Appendix 3; b. fumigation with ethylene oxide, methyl bromide, aluminum phosphide or other substance not contained in Appendix 4; c. ionizing radiation. 17c. Application of prohibited substances to equipment or facilities shall not contaminate organic product handled or processed therein. Application of prohibited substances to equipment or facilities shall not compromise organic integrity of product handled or processed therein.		
18a. Packaging material shall not contaminate organic food. 18b. Packaging materials, and storage containers, or bins that contain a synthetic fungicide, preservative, or fumigant are prohibited. 18c. Organic produce shall not be packaged in reused bags or containers that have been in contact with any substance likely to compromise the organic integrity of product or ingredient placed in those containers.			
19a. Operators shall take all necessary precautions to protect organic food against contamination by substances prohibited in organic farming and handling, pests, disease-causing organisms, and foreign substances. 19b. Water and substances that appear in Appendix may be used as equipment cleansers and equipment disinfectants that may come into direct contact with food. 19c. Operations that use cleaners, sanitizers, and disinfectants on food contact surfaces shall use them in a way that maintains the food's organic integrity. 19d. The operator shall perform an intervening event between the use of any cleaner, sanitizer, or disinfectant and the contact of organic food with that surface sufficient to prevent residual contamination of that organic food.			
20a. The person or company legally responsible for the production or processing of the product and the certification body shall be identifiable.	20c. Ways for labeling: a. where a minimum of 95% of the ingredients are of certified organic origin,		

20b. To be labeled as “produce of organic agriculture” or equivalent protected terms, a product shall comply with at least these standards. 20c. Mixed products where not all ingredients, including additives, are of organic origin and products that are entirely in compliance with these standards, shall be labeled in various ways (percentages in this section refer to raw material weight). 20d. All ingredients of a multi-ingredient product shall be listed on the product label in order of their weight percentage. It shall be apparent which ingredients are of organic certified origin and which are not. All additives shall be listed with their full name. If herbs and/or spices constitute less than 2% of the total weight of the product, they may be listed as “spices” or “herbs” without stating the percentage. 20e. Added water and salt shall not be included in the percentage calculations of organic ingredients. 20f. The label for conversion products shall be clearly distinguishable from the label for organic products. 20g. Organic products shall not be labeled as GMO-free in the context of these standards. Any reference to genetic engineering on product labels shall be limited to the production and processing methods themselves having not used GMOs.	products may be labeled “certified organic” or equivalent and should carry the certification mark of the certification body; b. where less than 95% but not less than 70% of the ingredients are of certified organic origin, products may not be called “organic”. The word “organic” may be used on the principal display in statements like “made with organic ingredients” provided there is a clear statement of the proportion of the organic ingredients. An indication that the product is covered by the certification body may be used, close to the indication of proportion of organic ingredients; c. where less than 70% of the ingredients are of certified organic origin, the indication that an ingredient is organic may appear in the ingredient list. Such product may not be called “organic.”		
21a. Operators shall have a policy on social justice. 21b. In cases where production is based on violation of basic human rights and clear cases of social injustice, that product cannot be declared as organic. 21c Operators not use forced or involuntary labor. 21d. Employees and contractors of organic operations have the freedom to associate, the right to organize and the right to bargain collectively. 21e. Operators shall provide their employees and contractors equal opportunity and treatment, and shall not act in a discriminatory way. 21f. Operators shall not hire child labor.	21a. Operators who hire fewer than ten (10) persons for labor and those who operate under a state system that enforces social laws may not be required to have such a policy. 21f. Children are allowed to experience work on their family’s farm or a neighboring farm provided that: a. such work is not dangerous or hazardous to their health and safety; b. it does not jeopardize the children’s educational, moral, social, and physical development; c. children are supervised by adults or have authorization from a legal guardian.	See also: Recommendations for inspection of social standards [112]	

BIO: Organic Farming – EC control system (organic agriculture)

Status:	In implementation
Geographical coverage:	European Union
Scope:	Organic agriculture including: A) Unprocessed agricultural crop products; also livestock and unprocessed livestock products. B) Processed agricultural crop and livestock products intended for human consumption. C) Feeding stuff [12].
Initiator system:	European Union [12]

Short summary system or initiative:	Extension system:	
The introduction of the 1st version of the Regulation in 1991 was part of the reform of the EU Common Agricultural Policy and represented the conclusion of a process through which organic agriculture received the official recognition of the 15 states which were EU members at the time [115].	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Y
Context:		
Forms part of the European policy on agriculture		
Status of system:		
On 1 January 2009 new EU regulations went into effect for the production, control and labeling of organic products. However, some of the new provisions on labeling do not take effect until 1 July 2010 [115].		
Planned activities:		
-		

Structure system or initiative:	
Juridical basis:	Voluntary
Participation in system:	EU Members participate in the system. The European Commission also works with two additional bodies that support its decision-making in matters of organic agriculture: • The "Organic Farming" advisory committee • The group experts for the promotion of organic farming The advisory committee brings together representatives of different technical and economic interest groups such as IFOAM, BEUC, COPA/COCEGA, COFALEC and others. This facilitates an exchange of experiences and opinions on different topics relating to organic production in order to promote the continued development of organic legislation [115].
Local stakeholder involvement	In the certification process, there is no stakeholder involvement or publication of results addressed. There are annual unannounced random audits of the certification owner [12].
Monitoring performance:	After an inspection body has been approved, the competent authority shall monitor the inspection body. The inspection body shall send to the competent authority each year a list of operators subject to their inspection and present to the said authority a concise annual report [12].
Chain of custody system	Member States ensure necessary traceability of products during the entire production chain. The operators shall ensure that products may be transported only in appropriate packaging in such a manner that substitution of the content cannot be achieved. Regulations for preparation units handling also products not from organic production [12].
Level of detail CoC system:	Certification is progressed by inspection authorities and/or by approved private bodies. Annual audits, Moreover, the inspection body or authority shall carry out random inspection visits, announced or not [12]

Further information on:	
Removal of trade barriers	-
Costs:	-

List of principles included (here specified for crops as maize, rapeseed, etc) [115, 116]:	
1	Organic production shall be based on a set of general principles that meet the objectives for organic production.
2	In addition to the overall principles, organic farming shall be based on specific principles for farming. (Note: criteria specified to livestock and aquatic animals are not shown in table)
3	In addition to the overall principles, organic farming shall be based on specific principles for the processing of organic food (criteria not shown in list)
4	In addition to the overall principles, organic farming shall be based on specific principles for the processing of organic feed (criteria not shown in list)
5	General production rules: prohibition on the use of GMOs and the use of ionizing radiation
6	In addition to the overall principles, organic farming shall be based on specific rules for plant production

* Rules for seaweed, livestock, aquaculture and rules for products and substances used in farming and for conversion are not included in this list.

List of criteria and indicators (Note: criteria specified to livestock and aquatic animals are not shown in table) [116]:

Criteria	Indicators:	Methodology used:	Databases used:
1.1 Organic production shall be based on the appropriate design and management of biological processes based on ecological systems using natural resources which are internal to the system.	By using methods that: (i) use living organisms and mechanical production methods; (ii) practice land-related crop cultivation and livestock production or practice aquaculture which complies with the principle of sustainable exploitation of fisheries; (iii) exclude the use of GMOs and products produced from or by GMOs with the exception of veterinary medicinal products; (iv) are based on risk assessment, and the use of precautionary and preventive measures, when appropriate;		
1.2 Organic production shall be based on the restriction of the use of external inputs.	Where external inputs are required or the appropriate management practices and methods referred to in paragraph (a) do not exist, these shall be limited to: (i) inputs from organic production; (ii) natural or naturally-derived substances; (iii) low solubility mineral fertilizers;		
1.3 Organic production shall be based on the strict limitation of the use of chemically synthesized inputs to exceptional cases	Exceptional cases: defined in legislation		
1.4 Organic production shall be based on the adaptation, where necessary, and within the framework of this Regulation, of the rules of organic production taking account of sanitary status, regional differences in climate and local conditions, stages of development and specific husbandry practices.			
2.1 Organic production shall be based on the maintenance and enhancement of soil life and natural soil fertility, soil stability and soil biodiversity preventing and combating soil compaction and soil erosion, and the nourishing of plants primarily through the soil ecosystem;			
2.2 Organic production shall be based on the minimization of the use of non-renewable resources and off-farm inputs;			
2.3 Organic production shall be based on the recycling of wastes and by-products of plant and animal origin as input in plant and livestock production;			
2.4 Organic production shall be based on taking account of the local or regional ecological balance when taking production decisions;			
2.5 Organic production shall be based on the maintenance of plant health by preventative measures, such as the choice of appropriate species and varieties resistant to pests and diseases, appropriate crop rotations, mechanical and physical methods and the protection of natural enemies of pests;			
2.6 The operator shall keep the land, animals, and products used for, or produced by, the organic units separate from those used for, or produced by, the non-organic units and keep adequate records to show the separation.			
5.1 GMOs and products produced from or by GMOs shall not be used as food, feed, processing aids, plant protection products, fertilizers, soil conditioners, seeds, vegetative propagating material, micro-organisms and animals in organic production.	Operators may rely on the labels accompanying a product or any other accompanying document, affixed or provided pursuant to Directive 2001/18/EC, Regulation (EC) 1829/2003 of the European Parliament and the Council of 22 September 2003 on genetically modified food and feed		

	(1) or Regulation (EC) 1830/2003 concerning the traceability and labeling of GMOs and the traceability of food and feed products produced from GMOs.		
5.2 The use of ionizing radiation for the treatment of organic food or feed, or of raw materials used in organic food or feed is prohibited.			
6.1 Organic plant production shall use tillage and cultivation practices that maintain or increase soil organic matter, enhance soil stability and soil biodiversity, and prevent soil compaction and soil erosion;			
6.2 The fertility and biological activity of the soil shall be maintained and increased by multiannual crop rotation including legumes and other green manure crops, and by the application of livestock manure or organic material, both preferably composted, from organic production;			
6.3 The use of biodynamic preparations is allowed;			
6.4 In addition, fertilizers and soil conditioners may only be used if they have been authorized for use in organic production under Article 16;			
6.5 mineral nitrogen fertilizers shall not be used;			
6.6 All plant production techniques used shall prevent or minimize any contribution to the contamination of the environment;			
6.7 The prevention of damage caused by pests, diseases and weeds shall rely primarily on the protection by natural enemies, the choice of species and varieties, crop rotation, cultivation techniques and thermal processes;			
6.8 in the case of an established threat to a crop, plant protection products may only be used if they have been authorized for use in organic production under Article 16;			
6.9 For the production of products other than seed and vegetative propagating material only organically produced seed and propagating material shall be used. To this end, the mother plant in the case of seeds and the parent plant in the case of vegetative propagating material shall have been produced in accordance with the rules laid down in this Regulation for at least one generation, or, in the case of perennial crops, two growing seasons;			
6.10 Products for cleaning and disinfection in plant production shall be used only if they have been authorized for use in organic production under Article 16.			
6.11 The collection of wild plants and parts thereof, growing naturally in natural areas, forests and agricultural areas is considered an organic production method.	Provided that: (a) those areas have not, for a period of at least three years before the collection, received treatment with products other than those authorized for use in organic production under Article 16; (b) the collection does not affect the stability of the natural habitat or the maintenance of the species in the collection area.		
6.12 The measures necessary for the implementation of the production rules contained in this Article shall be adopted in accordance with the procedure referred to in Article 37(2).			

Naturland (organic agriculture)

Status:	In implementation
Geographical coverage:	International (worldwide)
Scope:	Organic farming (production and processing) including forest management, livestock, aquaculture, fruit, permanent tropical plantations (mango, tea, etc), beekeeping, wild grown plants [117].
Initiator system:	Naturland was founded in 1982 with its headquarters in Germany [117].

Short summary system or initiative:	Extension system:	
Naturland works to high organic standards. The standards apply both to production and to processing [117].	Principles included:	
	Criteria included:	
	Indicators included:	
Context:		
The standards are more stringent than those of the German national eco label, Bio-Siegel, or than the legal requirements imposed by the EC Organic Directive [117].		
Status of system:		
In implementation. On a global scale, 50,000 Naturland farmers are cultivating an area of over 275,000 hectares. The social standards, which came into effect in 2005, identify the social responsibility of all Naturland's members [117].		
Planned activities:		
-		

Structure system or initiative:	
Juridical basis:	Membership basis, voluntary
Participation in system:	Naturland is organized on a regional and federal basis. The members in each German federal states are managed by their own regional association or their sector-specific association [15]. The Assembly of Delegates determines the policies and the current objectives of the association. All members of the Assembly of Delegates are agriculturists. According to, a specific rule to promote an equal representation of various stakeholder groups does exist but is, however, not clearly (publicly) defined [118]. Once every three years it elects the Board of Directors, which heads the Naturland association. The mission of the Standards Committee is to draft Naturland's standards and to bring them constantly up-to-date. The right to decide on which standards are to be accepted or modified lies with the Assembly of Delegates [15].
Local stakeholder involvement	Not explicitly mentioned in standards. Recommendations for inspection of social standards are developed including guidelines for stakeholder consultation [112],
Monitoring performance:	-
Chain of custody system	Track and trace system. A quality assurance system is required to document the Chain of Custody effectively [119].
Level of detail CoC system:	<u>Accreditation:</u> The Naturland Association and its certification system have been accredited by IFOAM (since 1997), USDA/NOP and under DIN EN 45011 (ISO 65). The norm DIN EN 45011 (ISO 65) describes the general requirements of bodies performing product certification to be able to class them as reliable and reputable. Annual assessments are made to confirm IFOAM- and ISO 65 accreditation [117]. <u>Verification:</u> Inspection includes control of production (yields, crop rotation), documentation (processing, storage and records of product flow), accounting and insight in the organization. The data are included in an inspection report [120]. The correctness of the report has to be confirmed by the operator. The inspection body forwards the report (including relevant annexes) to the Naturland Certification Committee for certification decision [118].

	Required documentation for processing includes list of suppliers, overview of quality assurance system, list of processing methods, production facilities, suppliers, etc. All materials are clearly labeled [119]. The external consultation is generally carried out at least on an annual basis. The final re-inspection rates are determined with regard to the overall efficiency of the Internal Control System ("risk factor") [117]. There is a general certificate (producer-Naturland) and a Transition Certificate (to accompany the merchandise and trade). Existing certifications must be annually renewed [120]. The producer signs a producer contract (producer-Naturland). To legally use the Naturland trade mark (logo), the producer signs the sublicense contract with Naturland Zeichen GmbH; this company is responsible for issuing licenses and transition certificates and monitors the contractual use [120].

Further information on:	
Removal of trade barriers	-
Costs:	Membership fee (for producers) [121]; • Small holder: 1 €/farmer of the small farmers organization • Small farmer: 0,25 €/farmer if average area/farmer < 1 ha • Individual farmer: 2 €/ha (the annual minimum membership fee (for all farmers) is minimal € 250,-) The fee covers the assistance to farmers during certification and public relations. License fee [121]: For the use of the logo and name, finance activities and develop product markets, there is an annual fee: • 1% on net sale price of all organic products sold to Europe; • 0,5% of net sale price of all organic products sold to non-European markets; • 0,1% of net sale price of all organic domestic sales to end-consumers (excl. Europe) Annual inspection costs [121]: The inspection costs are charged by the contracted inspection body. A day's work income of an inspector varies between 150 and 350 €, depending on the country.

Naturland has production and processing standards. Beside general requirements, individual production standards (for livestock production, market gardening, and mushroom cultivation, cultivation of ornamental plants, fruit cultivation, viniculture, permanent tropical plantations, wild grown products, beekeeping, aquaculture and organic forest management) are defined [122].

The specific principles for organic forest management are also listed below.

List of principles included:	
Principles on social responsibility [122]	
1	Human Rights: The basic rights of the people living and working on Naturland operations are respected.
2	Forced Labour
3	Freedom of Association, access to trade unions
4	Equal treatment and opportunities
5	Child labour
6	Health and safety
7	Employment conditions
General principles on production [122]	
8	Non-employment of GMO and GMO derivatives
9	Humus management and fertilization
10	Pest, disease and weed control
11	Seed and plant materials (incl. vegetative propagation material)
12	Tillage
13	Landscape management
14	Soil and water conservation
15	Crop production
Organic forest management [123]	

16	Stocking up with indigenous trees
17	First afforestations
18	Treatment of forest floor
19	Forest use and forest protection
20	Hunting
21	Opening up forest, harvesting and storage of timber
22	Use of fertilizer and synthetically produced chemical preparations
23	Natural dynamics
24	Reference areas

Criteria [122, 123]:	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
1a. They must com-ply at the minimum with the local legal requirements, respectively the human rights listed in the UN Conventions, the International Labour Organisation Conventions and Recommendations (ILO), and the UN conventions on children's rights, should these be more comprehensive.		See also: Recommendations inspection of social standards [112]	ILO conventions: http://www.ilo.org/ilolex/english/convdisp1.htm UN convention on children: http://www.unhchr.ch/html/menu3/b/k2crc.htm
2a. The operations commit themselves to rejecting forced labour and any type of involuntary work. The operation shall not retain any part of the workers salaries, benefits, property, or documents in order to force workers to remain on the farm.		See also: Recommendations inspection of social standards [112]	
3a. All workers have a right to freedom of association and collective bargaining. No one shall be discriminated against because of his or her membership in a trade union.		See also: Recommendations inspection of social standards [112]	
4a. No discrimination on the basis of race, creed, sex, or political opinion or membership shall be tolerated. All workers, irrespective of their sex, skin colour or religion receive the same pay and have the same opportunities for work of the same nature and same degree of responsibility.		See also: Recommendations inspection of social standards [112]	
5a. No children may be employed on farms. Children may work on the farms of their own families or a neighbouring farm provided that: • the work is not hazardous and endangers neither the health nor the safety of the children • the work jeopardises neither the educational nor the moral, social or physical development of the children • the children are supervised by adults while working or have been given permission by a parent or legal guardian		See also: Recommendations inspection of social standards [112]	
6a. All workers, employees and their families shall have access to drinking water, food, accommodation and basic medical care. The employer is responsible for safety and health at the workplace. If necessary, this implies instructing workers about safety at work. Operations with more than 10 workers have to draw up a policy on safety at work.		See also: Recommendations inspection of social standards [112]	
7a. Workers for the purpose of these standards are, besides the permanent workers, also seasonal workers and sub-contracted workers. All operations with at least 10 workers commit themselves to meeting the following requirements: 1. Contracts 2. Equal treatment 3. Wages 4. Payment in kind 5. Working hours 6. Social benefits 7. Further education	1* All workers receive a written contract of employment describing the basic conditions of employment. Working conditions and contracts have to be documented by the employer to be verified at any time. The employment conditions of all workers have at least to comply with the respective higher of the requirements of national regulations and ILO standards. 2* The different kinds of employment shall in no case result in unequal treatment of workers: all workers are considered to enjoy the same rights and working conditions including social benefits and other privileges for work of the same nature and same degree of responsibility (see III.4) 3* Workers shall be paid at least the official national minimum wage or the relevant industry standard when employed in processing operations. Workers shall be paid in cash, or in any other manner of their choice. 4* If they so choose, workers may receive part of their wage in kind for services such as housing, food or others offered by the operation. The value attributed to such deductions shall be fair and reasonable.	See also: Recommendations inspection of social standards [112]	Regulations of ILO Standards National labour regulation and ILO standard C184 (for working hours)

	Compulsive deductions from the minimum wage for such services are not permitted. 5* To permit flexibility and overtime in the peak season, an annual limit of working hours or a mutual agreement on overtime requirements in the peak period (for a maximum 6 weeks) is necessary. Such an agreement has to be in line with current national labour legislation and ILO Convention C184. 6* The employer ensures basic coverage for maternity, sickness and retirement. Operations with > 10 workers need to make a policy on wages and social security available to all workers. 7* The unit offer its employees the possibility of further education and professional training.		
8. Products that are produced in compliance with Naturland standards must be made without the employment of GMO and / or GMO derivatives.	Employment of GMO and their derivatives means their employment as foodstuffs, food ingredients, processing aids, fodder, compound fodder, feed materials and additives, fertilizers, soil improvement agents, seeds, etc.		
9a. In order to ensure long lasting soil activity and thus crop yields, special attention has to be paid to the basis of soil fertility: a) The humus balance has to be at least at equilibrium within the margin of varied crop rotation. b) Biodegradable matter of microbe, vegetable or animal origin forms the basis of fertilization. c) Special attention has to be paid to an adequate lime supply with respect to the area.	• Synthetic chemical nitrogen fertilizers, Chile saltpeter and urea must not be used. Mineral and trace element fertilizers that are not easily soluble can be used after consulting the adviser. • The amount of farm manure depends on the forage production of the farm and the resulting animal husbandry. • Nutrient losses during storage and the application of liquid fertilizers and dung have to be reduced to a minimum. Environmental pollution (this includes odors and pathogenic agents) has to be avoided. • Ploughing nutrients back in the soil using green compost is recommended on the principle of the recycling of nutrients if it is certain they do not transport harmful residue. Waste and/or urban compost, faecal and sewage sludge are prohibited.		Appendix provides list of permissible purchased fertilizers and soil improvement agents.
10a. To encourage healthy plants, prophylactic measures such as crop rotation appropriate to the site in question, tillage, humus management and fertilization, the choice of appropriate stand densities as well as the selection of healthy and resistant plants and seeds are the most important considerations.	The use of synthetic chemical substances and growth regulators is prohibited. Weeds are, as accompanying plants of crops and as the habitat of fauna, a prerequisite for a varied com-munity of species. The aim of regulation is therefore the containment of weed infestation to an extent tolerated by the crops being cultivated, and not the complete elimination of the weeds.		Appendix: list of permissible plant protection products
11a. The seed and plant material applied must – as far as available – be certified by Naturland or meet certification standards approved as equivalent by Naturland. If this is not available the farm manager has to give notice and proof of its non-availability.	The use or dressing of seeds or of plant material with synthetic chemical pesticides is not permitted. The seed and plant materials used may only be treated with list of substances. More requirements are mentioned.		Annexes provide information with which substances seeds and plant materials can be treated.
12a. The tillage process shall be such as to conserve the natural layers of the soil structure. This is done by employing the appropriate machinery. Special attention must be paid to the adequate humidity of the soil during the tilling process.			
13a. The farmer is obliged to conserve and, if required, to recreate structural elements of the landscape. This applies especially to large field units and serves the promotion of beneficial organisms and the self-regulation of the ecosystem.	Because cultivation and animal husbandry are appropriate to local conditions, organic farming methods are especially suitable for use in sensitive areas (e.g. protected water conservation areas). By creating extensive bands of grassland as buffer zones alongside unstable ecological systems (e.g. rivers and lakes), precautions are taken against potential soil loss and nutrient input.		
• 14a. the burning of organic matter (e.g. slash-and-burn, burning straw) is only permitted in exceptional cases. • The clearing of primary forest and the cultivation of primary			

organic systems (e. g. tundra) is prohibited. • Measures suitable to avoid the erosion of soil must be taken. • Excessive exploitation and exhaustion of water resources is not allowed. • Wherever possible, rain water is collected and used and the effects of the amount of water removed from water sources monitored. The way water is used and the other farming methods employed make only a negligible impact on the water quality. The farm management must avoid salination of soil and water.			
15a. Crop rotation serves the purpose of creating long lasting soil fertility and controlling the weeds, diseases and pests at the same time. For this reason, a minimum of one fifth of the crops on the arable land have to be legumes. This proportion may be reduced with the approval of the adviser, if either the conditions are very good (to at least one sixth), or if the location is particularly susceptible to the loss of nutrients.	• During crop rotation, winter and summer crops should complement each other in their effects to prevent the negative developments of monoculture. • Variety is an essential characteristic of organically cultivated fields. It should also be practiced in the choice of seed mixtures for forage growing as well as for catch crops and undergrowth. • Special attention has to be paid to ensuring sufficiently long periods between the cultivation of the same kind of crops. • The washing out of nutrients must be prevented by suitable cultivation measures (e.g. undergrowth, ploughing rotas commensurate with local conditions).		
16a. The natural regeneration and/or use of seeds or wilding plants of existent indigenous trees accord the natural forest community the best potential for regeneration suited to the site, and should be striven for. Planting and seed is, therefore, the exception and only the use of indigenous sorts of trees and origins are permitted.			
17a. Afforestations have to be agreed with Naturland.			
18a. Treatment of and exhaustive driving on the forest floor, including drainage measures, are not allowed in the forest. The upper soil may only be loosened in exceptional cases and on parts of its surface, and this may only be done after discussion and agreement with Naturland.			
19a. The use of trees to be harvested is done as single tree, stand or group cutting. Clear cutting and full tree use is forbidden. When using tree groups, the area cut must have a diameter not greater than the height of the neighbouring trees. The overall natural diversity of species should be preserved and/or fostered.	As a rule, the method, frequency and intensity of interventions for use will be agreed with Naturland on the basis of the planning data (e.g. forest management plan, expert's opinion on the production unit, etc.). If there are no forest-protection reasons to the contrary, logging debris should remain at the site of their coming into being to protect the forest floor.		
20a. All sorts of trees in the natural regional forest community should be able to regenerate and develop without special measures for their protection. Exotic species of hoofed game, such as mouflon, Sika and fallow deer must not be re-introduced or encouraged.	There are exceptions where the transformation or increase of non-indigenous stands is concerned, where measures to protect the mix of tree species against damages caused by game, become necessary.		
21a. The development of our forests for vehicles has in the main already been concluded. Plans for a network of routes are, therefore, to be agreed with Naturland. • A forest-protecting way of harvesting and hauling wood requires installing a permanently fixed system of back lanes. Hauling must be carried out along the back lanes and/or forest lanes and be realized in appropriate weather. Moving it with horses is to be striven for. Tractors with wide tires and cable winches should be used with preference. In inaccessible areas, skyline cranes allow careful harvesting of the wood. • The use of plant-based, biologically degradable chainsaw oil is obligatory.	Lane clearance has to be oriented at long-term forest treatment and - taking into account site conditions - be chosen in such a way that no more than 10% of the forest floor (lane clearance of 40 meters) will be used for driving on. In justified cases, Naturland may grant a limited exemption from the rule upon request.		

• Logs should be cut only, as far as possible, during the time in winter when the sap is at rest. • Firewood must be dried naturally, without the use of fossil sources of energy, while being stored for adequately long periods of time.			
22a. Introduction of substances which are foreign to the forest ecosystem is, in principle, forbidden. Exceptions to this rule are the use of suppressants and agents against browsing, rubbing and bark peeling, provided they do not contain synthetically produced chemical additives. An exceptional authorization for compensatory liming on partial areas may be applied for at Naturland.			
23a. In all areas, but especially in stocks still low in species and not yet appropriate for the forest site, natural dynamics must be permitted. The following is to be observed: 1. Preservation of rare forest trees. 2. Preservation of special biotopes, even beyond the extent to which they are legally protected (e.g. dry areas, forest swamps, moors, well areas, woods around boulders and in ravines). 3. Single trees or old forest groups will be marked and excluded from use and left to their natural aging process and natural decay. 4. This leads to an increase in the proportion of dying trees, dead trees and trees in decay (biotopic wood). 5. Preservation of tree monuments, extraordinarily clear-cut individual trees and cultural historical places in the forest.	4) The long term objective is to reach an overall proportion of standing and fallen biotopic wood of 10% of the wood stock. Registration will be carried out within the regular inventories.		
24a. Reference areas representative of the types of stands throughout the whole forest area should be designated for the purpose of recurrently making comparisons between not-managed and well-managed areas. The objective is to gain local and site information on the natural forest development and with that also information to be palled in organic forest use. Privately owned forests are not obliged to designate own reference areas. They shall, however, as well orient their forest use at comparable reference areas.	• To reduce border effects to a minimum, reference areas should be as large as possible (at least 20 hectares). • Forests being predominantly state and/or local authority forests shall designate at least ten per cent of their forest areas as reference areas within three years. • Exemptions are possible upon request (e.g. strongly splitted-up forests and forests strongly frequented by recreation traffic).		

LEAF Assurance Scheme (crops)

General characteristics:	
Status:	In implementation (established in 1991)
Geographical coverage:	UK – extending to other countries
Scope:	UK Farming practices – some biofuel crops are covered e.g. maize, rapeseed
Initiator system:	Initiated by a group of farmers, environmentalists, food and agricultural organizations, consumers, government and academics [124].

Short summary system or initiative:	Extension system:	
LEAF demonstrates IFM (Integrated Farm Management) principles through a nationwide network of volunteer Demonstration Farms carrying out IFM and showing other farmers how to adopt it. The LEAF work in the UK is part of a European wide movement - the 'European Initiative for Sustainable Agriculture' (EISA). Similar projects operate in Germany, France, Italy, Sweden, and Luxembourg [124].	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Guidelines (Y)
Context:		
Status of system:		
There are currently around 1000 certified farms within the scheme [8].		
Planned activities:		
LEAF aims to increase the number of certified farms to around 5000 within three years. LEAF also has plans to rollout its scheme in a number of other countries in response to demands from retailers [8].		

Structure system or initiative:	
Juridical basis:	Voluntary
Participation:	Development of the LEAF standard involved wide stakeholder consultation including NGOs [8].
Local stakeholder involvement	See criterion 1.10 >> Can you demonstrate any evidence of regular communication and participation with local community initiatives planned or under way to communicate a balanced and positive approach to farming?
Monitoring performance:	Does not have a mechanism to review the quality of the audits [8].
Chain of custody system	
Level of detail CoC system:	Farms can not be certified by LEAF alone but need a base standard such as EurepGAP or ACCS [8]. Rigorous system to ensure that audits are carried out to sufficient quality. Yet few Leaf marquee certifications not carried out by accredited certification body [8].

Further information on:	
Removal of trade barriers	
Costs:	Range from Farms below 121 hectares $160 per year to - Corporate farms of 50 -100 employees $4,700 per year. $400 to $950 per year depending on structure of farming business. Developing group certification option Inspections for LEAF and the base standard can be combined, thereby reducing costs [8].

The lists of principles (or so-called assessment points) are guided with criteria. These criteria are shown as questions to the farmers [125].

List of principles included [125]:	
1	Organization and planning
2	Management and crop nutrition
3	Crop protection
4	Pollution control and waste management
5	Energy and water efficiency
6	Wildlife and landscape
7	Animal husbandry and the environment

List of criteria and indicators [125]

Only criteria (shown in questions) and required evidence are listed here. Additional guidelines are not shown.

Criteria:	Indicator + indication accuracy > Evidence R = Recommended CFP = Critical Failure Point	Methodology used	Databases used:
1.2 Have you completed a full LEAF audit? *Number 1.1. is deleted since 2006*	The certification body will have access to the LEAF Audit prior to inspection and be able to access compliance to LEAF Marque standards and inspect the targets for action.		
1.3 Are you a certified full member of an appropriate assurance scheme for each enterprise on the farm, (if covered by a national assurance scheme and is appropriate in economic terms) Product supplied locally for local consumption may be exempt if the outcome of these activities is not detrimental to the farm as a whole.	You will need to see membership certificates. May be able to check membership register if access has been granted. As a guide the enterprise must be a commercial enterprise contributing to the farming business as a whole. Crops grown for family use are excluded		
1.4 Do you have a farm environmental policy?	Check policy		
1.5. Have you a documented plan setting out short and long-term environmental objectives?	Check plan includes aspects such as energy, water, pollution and other aspects of the business that impact on the environment. The LEAF audit performance profile with a comprehensive set of targets for action for each section would be sufficient.		
1.6 As part of the plan, are targets set to improve and enhance the environment?	Check plan for environmental targets on water, soil, air and energy use. There must be reference to the whole farm conservation plan. The LEAF Audit and performance profile and action plan can form the basis for this plan. Check for evidence that the business has considered all aspects of the environment		
1.7 Is there an annual review and update of the farm's environmental policy and plan?	Check for record of review and any necessary update. The LEAF Audit and performance profile must be used as an aid to the review. Check implementation of plan		
1.8 Is the Farm Environmental Policy signed and understood by full-time members of staff?	Check record of staff signing / marking the policy. This only applies to key staff in the operation, but the policy must be displayed for all staff to see. Ask staff to check understanding.		
1.9 Have you communicated your environmental policy to your suppliers and contractors?	Check that policy has been communicated to suppliers and contractors. (R) i.e. copy letters, meetings minutes etc		
1.10 Can you demonstrate any evidence of regular communication and participation with local community initiatives planned or under way to communicate a balanced and positive approach to farming?	A farm walk with communities, conservation work with volunteers. Evidence of feedback from interested parties. The use of LEAF's Speak Out communication toolkit to improve communication skills and help you get your message across is advised		
1.11 Is there a policy statement of your responsibility to your end customer/consumer?	Check policy statement. The farm's marketing organization may have a policy that can be used or referred to.		
1.12 Do you clearly identify market outlets and requirements for your produce prior to production, and integrate this within your crop planning process?	Records to show customer requirements are incorporated into production. Customer contracts or sales plans can be good evidence.(R)		
1.13 Is there a record of all received complaints, and documentary evidence of appropriate actions?	Evidence: Check records for complaints and action taken		
1.14 Have you completed and or updated the LEAF Marque custody warranty agreement register for the current year?	Copy of custody and warranty agreement or shown online completion (R).		
1.15 Does all produce registered in the custody and warranty agreement in products you sell, dispatched from the farm, indicate on the dispatch note and the invoice that it is LEAF Marque certified and show the LEAF Marque certificate Number?	Check dispatch notes and invoices for LEAF Marque identification and certificate Number against the custody and warranty agreement. This assessment point will not apply for the first visit.		
2.1 Are you, or do you use, a qualified agronomist for your crop nutrition advice?	Check that advice is taken from a FACTS-qualified agronomist in the UK or equivalent.		
2.2 Do you have a Nutrient Management Plan and is this integrated with the Manure Management Plan?	Check plan for relevance and adherence and that it takes account of NPK and minor nutrient applications. Check that reviews are being carried out. (R)		
2.3 Do you use soil-mapping techniques?	Check different soil types are identified; also areas prone to compaction, slumping, erosion, runoff and leaching, must be noted. Check that appropriate operations have been used and for evidence of the Soil Management Plan as part of the LEAF Audit.		

2.4 Do you adopt a general policy to conserve and build up soil organic matter?	Measures include incorporation of crop residues and efficient utilization of other organic materials, where available. Evidence of written policy. In some circumstances where soil is not used this may be N/A and must be justified by the grower.		
2.5 Are you aware of soils and crops prone to trace element deficiencies?	Check leaf/soil analysis, depending on which is appropriate. Keep written records of visible crop or livestock symptoms, for example in a crop diary.		
2.6 Do you take steps to estimate soil nitrogen supply to the growing crop?	Measurement of soil mineral nitrogen is best practice but records of estimated nitrogen supply are sufficient.		
2.7 Do you have a long-term cropping and rotation plan?	Refer to crop rotation plan. This plan will identify annual cropping for current year and your intentions for the future (ideally three years) Ask the grower to justify the rotation.		
2.8 Are field conditions assessed prior to operations being carried out to ensure timeliness, correct conditions and the most appropriate equipment and techniques are used?	Ask about decision process and check soil map (review) for risk areas. Growers must be able to justify or demonstrate cultivations have minimum impact and demonstrate any steps taken to reduce adverse impact. Check for visual evidence		
2.9 Do you record all cultivations and field operations?	Checking field records can be very onerous on large farms with small fields so grouping may occur and is acceptable. Exceptions to a documented plan will be acceptable		
2.10 You must record inorganic and organic fertilizer applications	Field records must show evidence that all nutrient applications have been applied at the correct rate, timing and placed accurately. Ask about applications in the field with operators and find evidence of records with operators.		
2.11 Are your operators / contractors trained in accurate application techniques of nutrients?	Check training records. For hand applications, check methodology used for fertigation, check management understanding of risk of nutrient leaching and any runoff. Internal training and experience is acceptable but must be recorded		
3.1 Do you have a planned and documented crop protection policy?	Evidence: Crop protection policy must include selection of varieties resistant to pest and diseases, cultivations, product selection, appropriate dose rate, a resistance management strategy Selection of pesticides to reduce any effects on beneficial species, where appropriate.		
3.2 Do you have strategies to avoid pest resistance to herbicides, fungicides, and insecticides?	Audit evidence will be found in the crop protection policy. Crop protection records can be checked to see if known strategies have been used.		
3.3 Where crop protection chemicals will be used, you must have a system for monitoring and recording pests (including vertebrate), disease, weed levels and beneficial predatory insects?	An agronomist or member of staff on a regular basis can carry this out. The use of thresholds e.g. for potato blight record weather, threshold warnings etc e.g. pheromone moth traps for apples, peas etc.		
3.4 Do you record the justification of use for crop protection practices?	Records of justification with spray records or monitoring records. Use of decision support systems, advice tools and other precision farming techniques		
3.5 Are you / your staff or contractors trained in the identification of pest, disease and crop disorders?	Check training records. An agronomist when walking the farm may train staff.		
3.6 Do you consider environmental impact of all crop protection practices, including chemical, mechanical and cultural means?	This must be considered in the crop protection policy. Records of justification with spray records or monitoring records. Use of decision support systems, advice tools and other precision farming techniques. etc		
3.7 Do you use the appropriate rate of pesticide, after growing conditions, infestation levels and pesticide type have been taken into consideration?	Check monitoring, recommendation and spray records for evidence of appropriate dosing. The use of adjuvants sometimes enables the use of reduced rates, where possible, and low volume spraying on some crops, but only within the statutory regulations		
3.8 Are steps taken to minimize damage to beneficial organisms and wildlife? These must be recorded.	Such evidence as selective products, evidence of predators, buffer zones, minimal cultivations and evidence of use of Environmental Information Sheets		
3.9 Do you have a documented procedure to ensure that harvest intervals are observed?	Check procedures in place and adhered to by operatives. This must identify proposed harvest date and the first permissible harvest date after pesticide application		
3.10 Do you take precautions to ensure pesticide use is limited to the area in which it is required?	Evidence: Methods include: • planning, • precision farming techniques, • accurate applications, • correct spraying conditions, • low drift techniques,		

	• choice of sprayer, • choice of spray nozzle • buffer strips or unsprayed strips of six meters adjacent to residential and business properties		
3.11 Wherever chemical mixing occurs, does the site give protection to the environment and water?	Check the mixing area takes into account yard drains, slope and proximity to watercourses or very permeable ground in groundwater protection zones.		
3.13 (*3.12 deleted)* Do you have a documented procedure and notification process, displayed to alert relevant staff and or authorities, for dealing with spillages damaging to the environment?	Evidence of procedure and with relevant contact details for the staff and or authorities and what immediate action should be taken. Speak to staff to ask if they know of the existence of the procedure		
3.14 Do you use an agronomist, who is trained appropriately, for your crop protection advice?	Record of certificates plus any information that refers to updated training being sourced agronomists may be employed by the business. In the UK BASIS Certificate in Crop Protection and on the BASIS Professional register are appropriate.		
3.15 Are all operators and managers trained and do they participate in continuous professional development in the proper use of pesticides with regular updates at appropriate intervals?	Check training records. Operators should aim to achieve 3 hours or more of training annually this is a guide and should be proportionate depending on farm size and pesticide usage		
3.16 Do you have test certificates for your sprayers from a nationally recognized scheme or carry out appropriate maintenance and calibration to ensure safe and reliable operation?	Check test certificates and or records of maintenance and calibration. Monthly calibration for sprayers that are used weekly is appropriate		
3.17 Do you record all pesticide applications?	Check records of pesticide applications and that the above are recorded. All operators within the spray team should also be recorded either on the spray record or as a separate record.		
3.18 Do you store plant protection products securely giving protection to the environment and people?	Check store against AIS No. 16 and check GLOBALGAP Guidelines		
3.19 Do you only use and store plant protection products that have approval	Check stores and records.		
3.20 Do you use pesticides at the correct rate, timing, etc for safe use?	Check records		
3.21 Do you take adequate precautions to protect neighboring businesses and the public from spraying activities?	Check operator instructions, headland to see lack of pest control or evidence of buffer strip. Where hand held-equipment is used with larger droplet sizes, better control of spray drift is likely. In these situations a buffer zone of less than 6 meters may be appropriate. Check for or ask about what precautions are taken specific to the farm		
4.1 Have professional advisors been involved in the assessment and planning of pollution control strategies?	Evidence of written advice and control measures in place. The level of sophistication and requirement will depend on the farm size and complexity of the production		
4.2 Have you completed a waste minimization process on the farm?	Evidence: should include: • review of current practice, • avoidance of waste, • reduction of waste, • re-use of waste, • recycling of waste and action taken.		
4.3 Do you have a Manure Management Plan, and is it integrated with the Nutrient Management Plan?	This includes slurry, manure and industrial wastes for incorporation. Check records for evidence of plan and field applications.		
4.4 Are all your fixed fuel tanks bunded?	Check fuel tanks are bunded.		
4.5 Do you carry out regular maintenance and calibration of equipment and machinery to ensure accurate and efficient application and operation?	Check maintenance records and procedures for sprayers, fertilizer and muck / manure spreaders and tractors		
4.6 Do you ensure that by-products and wastes are disposed of without risk to water quality and the wider environment?	Check systems and ask for procedures		
4.7 Have you identified and documented all potential pollutants on the farm?	Check inventory has been completed and has taken account of all pollutants, and that risk has been assessed		
4.8 Do you have an action plan to reduce the impact of these potential pollutants on the environment?	Completion of action plan, which can be incorporated into inventory		
4.9 Do you visually monitor and record the quality of drainage ditches and watercourses around your farm, especially after recent field operations?	Check for records of monitoring and check watercourses for signs of run off		

4.10 Do you have maps of all drainage schemes for fields and general farm building areas?	Contractors' certified maps of completed schemes or good farm plans with outfalls		
4.11 Do you record all new land drainage and identify outlets?	Check drainage plans		
5.1 Have you had an energy efficiency audit carried out on the Farm?	Check audit for completion /review/action		
5.2 Do you monitor energy consumption?	Record of energy use		
5.3 Do you record the CO2 emissions from the energy consumption records?	Check records		
5.4 Have you completed a water management plan for the whole farm?	Check water management plan and its implementation. Justification of practices must be recorded as part of the plan		
5.5 Do you review your water management plan annually?	Check management plan for review records i.e. date and changes		
5.6 When purchasing new equipment or establishing new buildings do you look for water and energy efficient products / designs?	Check for written policy. This can be part of the farm environmental policy		
5.7 (New 2009) Do you measure the water efficiency of your enterprises / crops?	Check measurements are being made and they have been uploaded to LEAF.		
5.8 (New 2009) Do you take account and analyze your water efficiency measurements, justify any change and plan to implement practices to improve water efficiency?	Check documented review, this may be part of the water management plan review or LEAF Audit		
6.1 Do you have a whole farm conservation audit?	Inspection of the map-based audit, including the following key environmental features. *Environmental features described in standard*		
6.2 Do you have a whole farm conservation plan, based on the audit?	there must be a positive attempt by the farmer to address wildlife conservation on the farm through the preparation of a whole farm conservation plan (map and text-based) that clearly identifies the necessary action required to conserve and enhance biodiversity and landscapes on the farm, and the protection and maintenance of archaeological or historical sites.		
6.3 Is your Whole Farm Conservation Plan an integral part of your farming system?	Evidence of procedures in all farming operations to protect and enhance wildlife and landscapes		
6.4 Have you notified the relevant authorities, where appropriate, and completed an Environmental Impact Assessment (EIA), where you are planning to bring or have brought "uncultivated land or semi-natural areas" into more intensive agricultural use by clearance of vegetation, cultivation, fertilization, liming, drainage, introducing high stocking rates, or earth moving etc?	Checks will be made to see that any intensification of agricultural activities that appear to have been carried out on previously uncultivated land or semi-natural areas. Check Whole Farm Conservation Plan for any EIAs.		
6.5 Do you retain traditional field boundaries, environmental / landscape features and other natural habitats?	Check maps and plans for removal of boundaries		
6.6 Do you restrict the timing and frequency of field / boundary management such as hedge cutting?	Visual assessment of any recent damage during field checks. Check conservation plan recommendations.		
6.7 Do you restrict the timing and frequency of water course management?	Visual inspection of ditches during farm inspection and evidence from invoice or timesheets.		
6.8 When removing trees from your farm, have you obtained a license where required and appropriate?	Where recent tree felling is apparent, evidence of removal approval documents must be available and should be referred to on the Whole Farm Conservation Plan and in accordance with local regulations.		
6.9 Have you retained all your hedgerow, boundary and in field trees?	Visual inspection of hedgerows and trees recorded as part of the Whole Farm Conservation Audit.		
6.10 Do you avoid deep cultivation under the canopy of in-field trees?	Visual inspection of field trees and hedgerow trees to check crop sown		
6.11 Do you have two-meter wide undisturbed field margins around all of your field boundaries?	Visual inspection		
6.12 Are your field margins under sympathetic management?	Visual inspection of margins		
6.14 (6.13 deleted): Do you have native habitat banks in fields larger than 20 hectares?	Visual inspections to check fields greater than 20 hectares are split with habitat banks. Check field size in cropping records for relevance of this standard.		
6.15 Do you use native and or appropriate species if seeding field	Records of seeding should be available including seed label		

margins and other habitats?			
6.16 Do you prevent applications and operations to all field boundaries and margins and minimize driving on them?	Evidence of procedures to ensure that fertilizers, insecticides, other pesticides and cultivations are not applied or carried out on field margins, permanent boundaries and conservation headlands. If the margin is part of an environmental scheme then scheme rules must be followed.		
6.17 Do you take care to avoid damage or destruction of scheduled and areas of archaeological or historical interest?	Visual inspection for any recent damage during field operations		
6.18 Do you through rotation and leaving land uncropped; give flora and fauna the ability to thrive on some land?	Check farm records or fields for evidence of uncropped land		
6.19 Do you adjust operations to avoid nesting birds during nesting season?	Evidence of avoidance of nests in crops, reduced mechanical weed control during nesting period and any innovative means the farmer may be using.		
6.20 Are staff involved in planning and implementing improvements to habitats and landscape features?	May need to ask staff for confirmation		
6.21 Do you, your staff or any other persons monitor flora / fauna, wildlife and/or the wider environment on your farm	Check monitoring records		
6.22 Do you have a minimum of 5% farm area available as habitats, not used for cropping & food production?	Check cropping plans and total farm area		
6.23 Where land is rented by you for less than three years do you seek information about your landlord's conservation management practices?	Check documentation from landlord ie LEAF audit or performance profile or membership number for LEAF Marque.		
6.24 Do you keep all public and traditional rights of way clear from obstructions, and keep stiles and gates in good condition?	Check any public and traditional rights of way for obstructions and stiles and gates are in good condition		
6.25 Do you ensure that public and traditional rights of way are way marked?	Check way marking of footpaths as listed on the Whole Farm Conservation Map.		
6.26 Do you provide nesting habitat, summer food and winter food for farmland birds or carry out other activities to enhance the habitat for native fauna?	Check that the farm has one measure from each group and has been clearly identified and considered on the Whole Farm Conservation Plan.		
6.27 Do you ensure that tenants that rent land from the certified business manage the land in a way that protects and enhances the environment?	Check if tenants are LEAF Marque approved an, if not, in any correspondence, encourage them to join LEAF.		
7: *Criteria about animal husbandry are not shown in this list, check guidelines and standard for more information.*			

Assured Combinable Crops Scheme (agriculture)

General characteristics:	
Status:	In implementation
Geographical coverage:	Great Britain [126].
Scope:	Combined livestock and crops. Crops include wheat, barley and rye, oilseeds such as linseed and rapeseed, pulses such as peas and beans and most recently, sugar beet [126].
Initiator system:	In 1998 [126].

Short summary system or initiative:	Extension system:	
The Assured Combinable Crops Scheme (ACCS) is a wholly owned subsidiary of Assured Food Standards (AFS) [126].	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Y
Context:		
The scheme was set up in 1998 to address food safety concerns and the quality requirements of different buyers, especially millers and bakers [126].		
Status of system:		
In implementation		
Planned activities:		
-		

Structure system or initiative:	
Participation:	
Local stakeholder involvement	
Monitoring performance:	Once certified the Certification Body will make regular assessments and to maintain your certificate, the farmer continue to conform to the Standards at all times. Membership fee and renewal is on 12 months basis.
Chain of custody system	
Level of detail CoC system:	There are four certification bodies (CBs) who hold a licence to audit the Scheme Standards, CMi Certification, SAI Global-FABBL, National Britannia and PAI. All are independent of ACCS and producers are free to decide who to join [126].

Further information on:	
Removal of trade barriers	-
Costs:	Producers pay their membership fee to the Certifier and the Certifier is responsible for all aspects of membership and inspection [126].

The standards are organized in sections and every section has an introduction explaining the objectives of the section as a whole [127].

List of principles (referred to as sections) included [127]:	
1	Seed, nursery and rootstock
2	Site and soil management
3	Environmental impact / conservation of sustainability
4	Environmental protection and contamination control
5	Staff and contractors
6	Crop storage and harvesting
7	Vermin control
8	Storage and equipment hygiene
9	Residues and contaminants
10	Traceability and integrity
11	Genetically modified organisms
12	Own transport for off-farm delivery
13	Documents and procedures

Criteria [127]:	Indicator **Only the numbered indicators – more indicators and guidelines are provided!**	Methodology used	Databases used:
1. Producers must only use approved chemicals for the treatment of seed or rootstock			
2. Producers must have a soil/growing media Management Policy and aim to maintain soil structure and control erosion	• It is recommended that producers know the classification of soils on their farms; understand their characteristics and production potential and that producers have a written policy on the conservation of soil organic matter. • It is also recommended that production practices are adjusted to maintain soil structure and control erosion. This can be demonstrated by a written Soil Management Plan which includes reference to conservation.		
3. Producers must be aware of any practices that have an environmental impact	• Producers who are planning to use land classified as uncultivated or semi-natural area at 01.11.2005 for arable production must ensure Environmental Impact Assessment (EIA) Regulations have been met. • In addition, if any of that land is used to produce energy crops producers must assess and record carbon losses.		
4.1 The farm must present a clean and tidy appearance			
4.2 All pesticides must be kept in a secure store to prevent contamination and pollution	• General warning signs must be placed on access doors. • The store must be sound, well ventilated, frost proof, have ease of access and have sufficient light to enable the spray operator to read the product label. An outside cage open to the elements is not acceptable unless the product is supplied in a container purposely designed for secure outdoor storage. • The store must have emergency facilities to deal with accidental spillages and be able to retain spillages or have an adequate sump to prevent contamination of watercourses • All pesticides must be stored in their original package. In the case of breakage only, the new container must be suitable with a fitted lid or cap and display the information on the original label. • New Powders must be stored on shelves above liquids. • All plant protection products in the store must have current UK approval. • New Keys and access to the pesticide store must be limited to staff with adequate training in the handling of pesticides.		
4.3 All fertilizers must be kept stored in a way that will prevent contamination and pollution.	• Fertilizers must not be stored with any combinable crops or sugar beet. • New Fertilizers must not be stored with pesticides or any other flammable materials. • Fertilizer stock records must be maintained which detail up-to-date quantities received and used and these must be updated at least every three months. • Liquid fertilizer must be stored in accordance with Defra's 'Protecting our Water, Soil and Air - A Code of Good Agricultural Practice for farmers, growers and land managers' (in suitable tanks/bowsers preferably away from watercourses) and a contingency plan must be in place in the event of leakage. • Granular fertilizer must be stored on a hard, dry surface preferably under cover, where spillage can be contained rather than carried by run off water into watercourses		
4.4 In the interests of security, fertilizer must be stored in such a way as to reduce the risk of theft, and appropriate actions taken should a theft be discovered			
4.5 Potential pollutants such as silage, slurry, agricultural fuel oil and waste such as empty containers must be stored appropriately to prevent pollution and spread of disease			
4.6 All paints, preservatives, disinfectants, baits, lubricants and other chemical products must be kept in a suitable store to prevent contamination and pollution			
4.7 Pesticides and other crop protection products must be applied to land in ways which prevent pollution	• Only plant protection products approved for use in UK on crops being protected can be used • All pesticides must be applied according to the statutory conditions of use. All pesticide		SOLAs (Specific Off Label

	applications must comply with current Regulations or SOLAs (Specific Off Label Approval) as indicated on the product label. Records must be maintained to confirm compliance and a hard copy or direct electronic access to the SOLA must be available • When mixing plant protection products, any handling and filling instructions stated on the label must be followed • Any areas of high pollution risk must be identified on the farm where application of pesticides should not be carried out. Farm maps must be used to show these areas. • Precautions must be taken to avoid or protect non- target areas from direct overspray or spray drift and local bee keepers must be given a minimum of 48 hours notice of the intention to apply a pesticide that is potentially hazardous to bees. • Certain pesticides carry a 'buffer zone' requirement when applied near water. When applying these pesticides, via a horizontal boom sprayer or air assisted sprayers, a LERAP (Local Environmental Risk Assessment for Pesticides) must be undertaken and whether or not the buffer zone laid down to protect water is reduced or not, the results must be recorded. • Pesticides must not be carried in the cab of the sprayer, and a safe method of transport, as detailed in the Code of Practice for Using Plant Protection Products must be used		Approval)
4.8 Pesticide and crop protection product use records must be kept.	• Regular crop inspections must be undertaken and recorded. • Pests, diseases and weeds must be monitored, where applicable by recording results and/or by participating in prediction programs. Thresholds where applicable must be used to avoid the routine application of pesticides • All pesticide applications whether carried out by the member or a qualified contractor must be recorded and kept for a minimum period of 3 years, as stated in the Code of Practice for Using Plant Protection Products. • Crop protection products must be appropriate for the control required as recommended on the product label or SOLA. Having regard to residue levels and environmental impact, members must follow all pesticide label recommendations		SOLAs (Specific Off Label Approval)
4.9 Pesticide spraying equipment must be checked regularly to ensure accurate and efficient application of pesticides	• An Annual Routine Operator Check must have been undertaken for all hand-held applicators and knapsack sprayers and the results recorded. • Where members use services of a third party such as a spray contractor, it is the member's responsibility to obtain a copy of the relevant NSTS Certificate for the active sprayer used		
4.10 Fertilizers, manures and composts must be applied to land in ways which prevent pollution, contamination and spread of disease	• Any use of treated Human Sewage Sludge on land destined for agricultural use must be in accordance with the Defra Code of Practice for the Agricultural Use of Sewage Sludge. • Untreated Human Sewage Sludge must not be applied to farm land. • Fertilizer rates must be based on a calculation of the nutrient requirements of the crop and on regular analysis of nutrient levels in soil, plant or nutrient solution. • Nutrient applications should be guided by levels contained within Defra/SAC fertiliser recommendations. • The supply and timing of nutrient application must be matched to meet crop demand as nutrient leaching has significant environmental consequences. • Records of all applications of soil/substrate and foliar fertilizers must be retained and include, where appropriate, location, date of application, type and quantity of fertilizer applied, the method of application and the operator name. • Purchased inorganic fertilizers used within the last 12 months must be accompanied by documentary evidence and this documentary evidence should detail the heavy metal content • Precautions must be taken when applying nutrients to protect non-target areas from fertilizer/nutrients		Defra Code of Practice for the Agricultural Use of Sewage Sludge
4.11 Fertilizer spreaders must be checked regularly to ensure accurate and efficient application of nutrients.			
4.12 All farms using organic waste and manures must have and implement a written Manure Management Plan to prevent pollution, contamination and spread of disease			

4.13 All wastes, including surplus pesticides, other chemicals and empty containers must be disposed of in accordance with legislation and relevant codes of practice to prevent risks of contamination and pollution	• Empty containers must be cleaned using an integrated pressure rinsing devise or rinsed three times with water, and the rinsate returned to the spray tank. • Growers must ensure that: Empty pesticide containers are not re-used, and are stored, and disposed of, in accordance with the options available under the Waste Management Regulations 2006. *Additional guidelines are provided in standard.* • The safe disposal of redundant pesticides must be planned and recorded and obsolete pesticides can only be disposed of through a certified or approved chemical waste contractor or the supplying company. • Under normal circumstances surplus spray mix should not occur. However if surplus does occur, it must be sprayed onto designated areas		
5.1 There must be sufficient people available who are competent, that have the necessary experience and / or training for the work they do.	• Formal training must be given to all people handling, storing and using agrochemicals which covers legislative requirements and industry Codes of Practice relevant to the operations being carried out and all people operating potentially dangerous or complex equipment. This includes sub-contracted staff. • The Control of Pesticides Regulations (COPR) 1986 requires that all sprayer operators must have appropriate training and hold, where relevant, the appropriate certificate(s) of competence. Any pesticide applications made as a commercial service (contracting) must only be undertaken by certificate holders. Untrained operators who require a certificate of competence must be supervised whilst they apply pesticides by a certificate holder and must be within sight and sound of the supervisor Members must be able to demonstrate their competence and knowledge having undertaken adequate training on pesticide usage and application • Sprayer operators must be registered on the National Register of Sprayer Operators • Where an adviser, consultant or trade representative advises on fertiliser usage etc on a member's farm, it is the member's responsibility to obtain the relevant FACTS Professional Register number. The member should also ensure the adviser, consultant or trade representative has read the Scheme standards and agrees to advise on fertiliser use in compliance with the standard • Where an adviser, consultant or trade representative advises on pesticide usage on a member's farm, it is the member's responsibility to obtain the relevant BASIS Professional Register number and to ensure the adviser, consultant or trade representative has read the Scheme standards and agrees to advise on pesticide use in compliance with the standards • Where members use the services of a third party >> *specifications on requirements for 3rd party are provided in standard*		The statutory Codes of Practice from DEFRA and the Health and Safety Executive (HSE) must also be adhered to.
5.2 Records must be kept of the experience, qualifications and training for all persons working on the holdings (both full-time and part-time).	• Sprayer operators must be registered on the National Register of Sprayer Operators and where spraying operations are contracted, it is the responsibility of the member to ascertain and record, the sprayer operator's name and valid NRoSO membership number • All sprayer operators must hold, where relevant, the appropriate certificates of competence (i.e. certificates issued by the National Proficiency Test Council).		
6.1 Producers must determine the condition of crops immediately they go into store and make an assessment of risk in terms of storage	• The temperature and moisture content of grain must be monitored. Any rise in temperature must be investigated. Appropriate action must be taken to remedy water ingress, bird and rodent activity, and hot spots. If insects/mites are detected, refer to HGCA Grain Storage Guide 2nd edition or seek further advice. In all cases records must be kept of the dates of all checks and follow-up action, where applicable • Regular ongoing risk assessments (at least annual) must be carried out and in relation to the storage facilities including reference to the fabric of the store and any stored crops • Moisture meters and temperature probes must be calibrated annually and the results recorded • If any post-harvest pesticides or diatomaceous earth products are used on grain, the product used, dose rate, date and reason for application must be recorded • If any pre-harvest grain store pesticides are used, the site, the product used, dose rate and date of application must be recorded		

6.2 Buildings used for temporary holding of crops must be suitable for use	• All light bulbs, tubes, lamps, windows or any other glass material must be protected or constructed to avoid broken glass contaminating the grain • Any buildings or facilities used for temporary holding of grain must have suitable floors of solid construction to prevent contamination of grain with earth, stones, debris etc. Walls must be constructed of suitable material to prevent contamination of the stored grain •		
6.3 Buildings used for long-term storage of crops must be suitable for use	• Buildings used for long-term storage of grain must have solid floors and suitable walls and doors • All light bulbs, tubes, lamps, windows or any other glass material must be protected or constructed to avoid broken glass contaminating the grain		
6.4 In the case of flat grain stores, hard outside loading areas must be maintained in a clean and well-drained condition			
6.5 All bulks/bins must be labelled with variety (ies) and field(s) of origin			
6.6 Drying equipment must be regularly maintained in line with manufacturers' instructions by demonstrably competent staff.			
7.1 An effective control system must be in operation in the areas detailed to control infestation by vermin and other animals	• Effective vermin control measures must apply to all storage sites and these control measures must comply with statutory label instructions and be recorded. The records must include a site plan showing the location of bait points and be kept for 2 years • The vermin control system must prevent bird, rodent and domestic animal entry to all long-term grain storage. Entry points around gutters, eaves, doors, loading pipes etc should be secured. Doors should be kept shut wherever possible and stores kept as dark as possible. Where stores are multi-purpose/mixed usage it may not be possible for safety reasons to darken stores and this is acceptable. • Insect traps (Pitfall traps and equivalent) in stored grain must be used as a means of monitoring insect/mite activity. If insects/mites are detected, refer to HGCA Grain Storage Guide 2nd edition or seek further advice. In all cases records must be kept of the dates of all checks and follow up action, where applicable		
8.1 All grain store walls, floors and horizontal surfaces of any storage, holding or reception facilities must be cleaned and, where appropriate, washed and insecticide treated prior to use	• Where livestock buildings are intended for use as grain storage or temporary holding facilities, at least 5 weeks prior to storage they must be thoroughly cleaned, power washed and sanitized with a food grade sanitizer (check manufacturer's instructions). Cleaning records must be available for inspection by the assessor		
8.2 All equipment used for the harvesting, transportation handling, conveying and loading of grain must be thoroughly cleaned and the dates recorded			
9.1 Producers must determine whether any of the crops grown require specific action to minimize pesticide residues as required by the specific market			
9.2 Producers must regularly carry out a risk assessment to decide the extent of any measures to be taken to reduce risk of contamination of crops	• Adequate provision including secure segregation must be made to ensure that there is no contamination of stored grain from treated seed or seed treatment chemicals		
10.1 There must be traceability up and down the production process and a system in place to pass this traceability link to the next point in supply chain	• Before delivering combinable crops members must ensure that there is a completed and signed Post Harvest Pesticide Declaration, which includes trailer identification number and scheme sticker • Representative samples from each storage bin and or silo must be taken and retained at time of filling. It is recommended that representative samples of each bulk in flat store and/or drying floor be taken and retained at time of filling • A member must not market assured and non-assured combinable crops produced on the same holding. Any non-assured grain held on the holding must be physically separated from the assured grain and separate records must be kept showing deliveries in and out of any non-assured grain • All certificates/lot numbers and any seed treatment of purchased seed must be available for inspection		

11.1 Production of any Genetically Modified Organisms must comply with legal requirements	• Genetically modified (GM) crops and other GM materials must be not be stored with other crops/fresh produce unless they are separated by a rigid physical barrier. Animal feed may contain genetically modified material and therefore must be stored separately from crops/fresh produce • If GM and non-GM Crops are mixed in storage, the whole bulk must be regarded as genetically modified and labeled as such. • The Code of Practice on the Provision of Information Relating to Genetically Modified Crops must be adhered to		
12. 1 All trailers must be uniquely numbered or lettered for identification purposes	• An inventory must be held of all vehicles or trailers owned, hired or leased. The record must include the identification number, the date that the trailer was purchased or hired and, if relevant, the date of disposal		
12.2 Vehicles or trailers and sheets must be clean, inside and out, before use	• Vehicles or trailers and sheets must be disinfected / sanitized if the vehicles have previously carried material on the Haulage Contaminant Sensitive List-see relevant Appendix. Records must be kept of the cleaning operation		
12.3 Measures must be taken to avoid contamination of loads			
12.4 Vehicles must not be loaded until they have been inspected and passed as being fit for loading	• Producers must be able to provide evidence of the three previous loads together with a record of the last cleaning and disinfection of the vehicle		
13.1 Producers must have available a copy of the documents and codes of practice as indicated			
13.2 An emergency plan must be available and accessible to all staff			
13.3 Producers must be registered with regulatory authorities under relevant legislation as indicated			
13.4 There must be a documented record of any written complaints received that are relevant to the requirements of the scheme standards			

Netherlands government (biomass for energy)

General characteristics:	
Status:	Standard available
Geographical coverage:	For all countries applicable [128]
Scope:	Biomass from all origins
Initiator system:	Government of the Netherlands, in preparation by project group "Sustainable production of biomass" [129]

Short summary system or initiative:	Extension system:	
The project group has developed 9 principles to guarantee the sustainability of biomass. These principles are translated into a national standard NTA 8080 [128]. The NTA 8081 describes the certification scheme, which will include the 'rules' to enable certification against the requirements of the NTA 8080.	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Y

Context:

The Dutch government wishes to incorporate sustainability criteria for biomass into the relevant policy instruments. In the short term this regards the Dutch subsidy arrangement for electricity production and the obligation for biofuels for road transport. In the longer term the Dutch government wishes to promote a wider application of these sustainability criteria [129].

Status of system:

The sustainability criteria are translated into a national standard: NTA 8080. NEN will be the scheme holder of the standard. The NTA 8081 describes the certification scheme, which will include the 'rules' to enable certification against the requirements of the NTA 8080.

In 2009, certifiers (in close cooperation with NEN and working groups) tested the standard for verification and develop an auditing scheme. [130] commends in march 2009 that some indicators in the NTA standard are still open and can be interpreted in various ways. It is important that this is avoided to minimize free interpretation space of certifying companies. The results and recommendations will be brought back into the working groups and finalized. It is expected that the standard is validated in around half a year (summer 2009). As next step, the standard will be tested in the field with pilots in the 3rd quarter of 2009. These experiences will be used to (if needed) adapt the standard and scheme [130].

The Netherlands has signed a MoU with Brazil on the topic of sustainable biomass certification [128].

Planned activities:

A successor of the Cramer Commission is the established 'Corbey' Commission (CBD) that advises the government on sustainability issues of biomass and bioenergy. Recommendations include advice on the implementation of the EC-RED reporting obligation, how to deal with Indirect Land Use Change (ILUC) and including sustainability criteria for solid biomass on European level. CDB wishes to stress that today's situatic with its lack of European sustainability criteria for solid biomass is undesirable: A biobased economy requires clear regulations that apply to all uses of biomass and guarantee a level playing field for all the sectors involv [131]. The recommendations can be found on www.corbey.nl

The certification scheme NTA8080/81 is being validated and adjusted by means of pilots before the scheme will be established and published. The scheme will be submitted to the Dutch Accreditation Council for acceptation. The conditions of the Dutch Accreditation Council for acceptation of schemes are taken into account in the drafting process of the certification scheme.

The sustainability criteria in standard NTA 8080 will be linked to the subsidies for electricity companies in 2010. It is expected that the sustainability criteria for biofuels will go in implementation from 2011 onwards. Here, the Netherlands is looking for close cooperation with the EC and other countries. The NTA 8080 is brought into the discussion groups of CEN TC 383 [128].

The 'Agentschap NL' in the Netherlands is funding various projects in developing countries – based on a tender in 2009 - to promote the sustainable production from biomass and bioenergy. The funded projects can be found on the site from Agentschap NL:
http://www.senternovem.nl/duurzamebiomassa-import/index.asp

Structure system or initiative:	
Juridical basis:	Voluntary (for electricity and heating). Electricity companies can only receive subsidies when sustainability criteria are met [128] (not implemented yet)
Participation:	Principle and criteria development through consultation process in the form of working groups, consultation rounds, etc.
Local stakeholder involvement	Stakeholder involvement (on micro and macro – e.g. national government – level) is given shape by submitting the draft report on sustainability to the local and regional stakeholders. The reactions of stakeholders are incorporated into the final report, which is subsequently supplied to the purchaser, see also [129]
Monitoring performance:	-
Chain of custody system	For electricity and heating: no limitations (mass balance, track and trace or book and claim): the three models are all acceptable but in combination with different sustainability claims. For all counts that certain verification requirements have to be met. For biofuels: mass balance system [128].
Level of detail CoC system:	Certification audits shall be carried out in accordance with the guidelines in ISO 19011 by an audit team. A summary of the audit reports has to become publicly available incl. nature raw material, data of address production location, and surface area for cultivation. Group certification will be possible. A certification system can make use of logo and labels [132]. Certification will take place by independent CB, accredited on the basis of ISO Guide 65 by an accreditation body which evidently complies with the requirements in ISO 17011 [132].

Further information on:	
Removal of trade barriers	The sustainability criteria – as developed in standard NTA 8080 – meet the WTO requirements [128].
Costs:	This discussion is ongoing. In case of certification to receive subsidy for heating and electricity (as in the Netherlands), the end-user will apply for the certificate (and probably also pay for the costs). The biomass producer can apply for a certificate for production (e.g. RSPO, FSC), which can be used for the final certificate to receive the subsidy. Costs for verification in the field are calculated per day or half day working. This is a sum of audit days + (if needed) travel, hotel and transport costs. Auditing costs depend on [130]: - The number of auditing days (in the Netherlands, the auditing companies will come to one proposal with number of days required to improve transparency on this topic). - Are travel and transport costs needed? (depends also on size certification company and offices in other countries) - Contract period (1 or 5 year for example) It also depends whether a company chooses the cheapest auditing company or the company with a good reputation (but higher costs). Bottleneck: the size of the biomass to be transported. For example: • Import of 300.000 ton > 1 x 3 auditing days = 3 days • Import of 6 times 50.000 tons > 6 x 3 auditing days = 18 days This might result in a preference for large-scale producers [130].

List of principles included [129, 132]:	
1	General requirements
2	The GHG balance of the production chain and application of the biomass must be positive
3	Biomass production must not be at the expense of important carbon sinks in the vegetation and in the soil. 3a. Conservation of above-ground (vegetation) carbon sinks when biomass units are installed. 3b. The conservation of underground (soil) carbon sinks when biomass units are installed.
4	The production of biomass for energy must not endanger the food supply and local biomass applications (energy supply, medicines, and building materials).
5	Biomass production must not affect protected or vulnerable biodiversity and will, where possible, have to strengthen biodiversity. 5a. National regulations and laws biomass production and production area 5b. Protected areas 5c. Areas with HCV 5d. Maintenance and recovery of biodiversity 5e. Strengthening of biodiversity.
6	In the production and processing of biomass, the soil, and soil quality must be retained or even improved. 6a. National regulations and laws for soil management 6b. Preservation and improvement of the soil quality 6c. Use of residual products.
7	In the production and processing of biomass ground and surface water must not be depleted and the water quality must be maintained or improved. 7a. National regulations and laws for water management 7b. Preservation and improvement of water quality 7c. Renewable sources
8	In the production and processing of biomass the air quality must be maintained or improved. 8a. No violation of national laws and regulations for air emissions and air quality. 8b. Reducing emissions and air pollution 8c. No burning during the installation or management
9	The production of biomass must contribute towards local prosperity.
10	The production of biomass must contribute towards the social well-being of the employees and the local population. 10a. No negative effects on the working conditions of employees 10b. No negative effects on human rights 10c. The use of land shall not lead to the violation of official property and use, and customary law without the free prior consent of the sufficiently informed population 10d. Positive contribution to the well-being of the local population 10e. Insight into possible violations of the integrity of the company.

Category of residual flows representing a negligible economic value (< 10%) of the main product (for instance agricultural or forestry products) and having no other useful applications: Only a limited number of criteria and indicators will be applied: a positive GHG balance and the prevention of detrimental effects on the soil quality are required [129].

List of criteria and indicators [132]7:

Criteria	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
1a. Records, reports and notes shall be prepared and kept as evidence of conformity with requirements and provisions, as basis for information which shall be delivered for established reporting to 3rd parties and as evidence for the effective execution of measures, procedures and management plans to be carried out. Reports have to be readable. A procedure has to be established to protect, manage, etc. records.	The organization shall: - Assess documents on suitability for the intended purpose, preceding to bring it in use; - Revise and adapt and if necessary reassess documents on suitability when needed; - Determine and introduce procedures to be sure which is the present status of revision of documents; - Determine and introduce procedures to be sure that the relevant versions of documents are available on all those places where they are applicable; - Determine and introduce measures to be sure that documents remain permanently readable, unambiguous to be identified; - Determine and introduce procedures to be sure that documents of external source can be recognized in such a way and their distribution is managed by the organization; - Determine and introduce procedures to be sure that the unintended use of expired documents is prevented and that these documents are clearly identified as expired, when they remain in circulation for any purpose; - Retain documents for a period of at least 5 years or for as much longer as mandatory to prevailed laws and regulations.		
1b. The organization shall enforce all applicable laws and regulations of the country of establishment, as well as international agreements and treaties which the country of establishment has signed and shall comply with P&C of NTA8080.	This implies that: - The organizations shall enforce all applicable national laws and regulations; - The organization shall comply with all applicable legal prescribed reimbursements, royalties, taxes, etc. - The organization shall enforce the provisions of all bound international treaties as far as the country of establishment has signed the treaty; - Conflicts between laws and regulations and the provisions of this NTA for the purpose of certification shall be evaluated case by case by the CB and the parties concerned to which the conflict applies; - Regions, to which this NTA applies or is implemented, shall be safeguarded against illegal chopping or harvesting, illegal establishment and other unauthorized activities; - Administrators of regions, to which the NTA applies or is implemented, shall show long time involvement to comply with requirements of this NTA.		
1c. The organization shall consult parties which in one way or another are interested in the region in which the production unit (PU) is being or is established. Usually these parties concerned have a clear vote in the way the organization can and may practice the exploitation of the PU. The consultation concerns, as far as applicable a list of determined areas of attention as: - enlarging involvement local population - determining HCV areas - Etc (list not complete here) The CB shall consult the direct stakeholders in the range of influence of the producer of primary biomass to	For an effective and adequate contribution of the parties concerned, the organization shall: - Identify, register and invite national and local stakeholders to participate in the consultation of stakeholders; - Consult the identified stakeholders who expressed their willingness to participate in the consultation; - Ensure that the stakeholders are informed about all cases to which the need is made known, unless this is evidently severe harmful for the position of the organization; - Take applicable measures to solve substantive differences in opinion with parties concerned. The CB shall develop and record a methodology for the performance of consultations of direct stakeholders.		

verify whether the performances of the producer of primary biomass correspond with the requirements or not.			
2a. In the application of biomass a net emission reduction of GHGs must take place along the whole chain. The reduction is calculated in relation to a reference situation with fossil fuels.	A net GHG emission reduction shall take place among the whole chain. The reduction is calculated in relation to a reference situation: - For electricity and heat at least 70% in case of reference of Dutch mixture of electricity or coal, or at least 50% in case of reference of natural gas; If in the chain of biomass innovative preparation technology or technologies are demonstrably used to enlarge the availability and / or applicability of sustainable biomass, a minimum of 50% applies; - For transportation fuels at least 50%; for those flows of biomass for which in the European Directive for RES "a typical GHG emission saving of less than 50% is included as transition period till 2012, a minimum of 35%.	A standard methodology is developed and has to be used. Two tools are designed to calculate the GHGs of bioenergy and for biofuels. See also technical report.	
3a.The installation of new biomass production units must not take place in areas in which the loss of above-ground carbon storage cannot be recovered within a period of ten years of the intended biomass production. The reference date is 1 January 2007, with the exception of those biomass flows, for which a reference date already applies from other certification systems (currently under development).	The organization shall: - Establish preceding the installation of new PU which carbon storage will be lost in the vegetation and in the soil by the installation of the PU; - Establish whether these losses will be compensated by means of cultivation of the intended biomass during the next 10 years; - Take measures to reduce the emission of GHGs from the soil during cultivation; - Monitor, measure and analyze the measures; - Document the results Note: When for the concerned types of soil and/of vegetation independently established and approved reference values are not available, the establishment of the carbon storages should take place by an independent 3rd party according to that far extend established and approved procedure.		
3b. The installation of new biomass production units must not take place in areas with a great risk of significant carbon losses from the soil, such as certain grasslands, peat areas, mangroves and wet areas (wetlands). The reference date is 1 January 2007, with the exception of those biomass flows for which a reference date already applies from other certification systems (currently under development).			
4a. Insight into the change of land use in the region of the biomass production unit	The organization shall report, at the request of the government, about the potential risk on indirect effects in the field of competition with food and local applications of biomass and effects of land use changes, directly associated with this. The duty for reporting includes the following components: - The nature of the raw material - - The production location - The surface area of cultivation - Information about LUC in the region including future developments, when information is available; - Information about changes in land and food prices in the region including future developments, when information is available. - Information about the availability of biomass for food, energy supply, construction materials, medicines or otherwise on local and regional level, and the relation – if any – with cultivation of energy crops, when information is available.		
4b. Insight into the change of prices of food and land in the area of the biomass production unit			
5a. No violation of national laws and	The organization shall:		For international

regulations that are applicable to biomass production and the production area.	- Prove, as far as applicable, that the national laws and regulations are known in general and the laws and regulations with respect to land ownership and land use rights, forest and plantation management, forest and plantation, exploitation, protected areas, wildlife management, hunting, spatial planning and the rules arising from signing of international conventions in particular; - Take measures which are needed to ensure that the requirements of the mentioned laws and regulations are complied with; - Take measures which are needed to ensure that the changes in applicable laws and regulations and the enforcement of these are established and applied properly.		conventions is considered: CBD: Convention on Biological Diversity CITES: Convention on International Trade in Endangered Species.
5b. In new or recent developments, no deterioration of biodiversity by biomass production in protected areas.	- The Biomass production shall not be practiced in a 'gazetted protected area' or in a zone which at any point is moved off a distance less than 5 km from a 'gazetted protected area'. - Biomass production in gazetted protected areas or in a zone of 5 km around these areas is only permitted when: o Biomass production is permitted according to applicable laws and regulations (under provision) in the area; o Biomass production is part of acknowledged management to protect the biodiversity values in areas that own their great 'historical' biodiversity value to human intervention; o Biomass production at the PU is started before 1 January 2007, or a reference dates from other certification systems (currently under development) and has taken place since in a continuous series of production cycles.	The positions of protected areas indicated by governments shall be verified by means of the following sources: • World Heritage Sites UNESCO; • IUCN list of protected areas; • Ramsar areas being wetlands; • Integrated biodiversity Assessment Tool IBAT	Relevant sites: UNESCO World heritage sites IUCN List of Protected Area's categories I, II, III and IV RAMSAR areas (wetlands falling under the Convention on Wetlands) Website links are provided in standard
5c. The biomass production shall not be practiced in areas which are pointed out as areas with HCV in dialogue with stakeholders or in a zone which at any point is moved off a distance less than 5 km from an area with HCV.	Biomass production in areas with HCV or in a zone of 5 km around these areas is only permitted when: - It is demonstrated that by biomass production the HCV of an area is not affected - Biomass production is part of acknowledged management to protect the biodiversity values in areas that owe their great 'historical' biodiversity value to human intervention, such as reed lands and heath lands - Biomass production at the production location is started before 1 January 2007, or a reference date from other certification systems (currently under development) and has taken place since continuously.		HCV categories 1 to 6 For updated surveys of HCV areas for each country refer to http://hcvnetwork.org/practical-support
5d. Maintenance and recovery of biodiversity	The organization shall: - At least 10% of the functional soil area of the PU left covered with the original vegetation, representative for the area, for recovery of biodiversity; - Record in which land zone the PU is located; - Record whether the biomass production contributes to the recovery of degraded areas within the PU; - Establish and record measures in management plans and monitor, measure and analyze these measures; - Document the results The principle of precaution applies to HCV within the PU. The HCV areas in the PU are described in the management plan and as far as possible indicated in a map.		
5e. Strengthening of biodiversity	The organization shall: - Take measures, which are needed, where possible to improve the biodiversity within the PU and to limit fragmentation and disintegration of natural land on and through the PU; - Take measures, which are need to ensure that disruption of the environment by entering, use of agrochemicals, noise and invasion of exotic species from the PU; - Establish and record measures in management plans and monitor, measure and analyze these measures - Document the results.	.	
6a National laws and regulations for	The organization shall:		Stockholm convention on

soil management.	- Show, as far as applicable, that the national laws and regulations in general are known and the laws and regulations with respect to waste management, the use of agrochemicals, mineral system, the prevention of soil erosion, environmental impact assessments and company audits in particular; - Show that the provisions of the Stockholm convention on persistent organic pollutants are known as concerns the application to harmful pesticides. - Take measures which are needed to ensure that the requirements of the mentioned laws and regulations are complied with; - Take measures which are needed to ensure that the changes in applicable laws and regulations and the enforcement of these are established and applied properly.		persistent organic pollutants These are the following materials: 1. PCBs, 2. Dioxines, 3. Furans, 4. Aldrin, 5. Dieldrin, 6. DDT, 7. Endrin, 8. Chlordane, 9. Hexa Chlorobenzene (HCB), 10. Mirex, 11. Toxaphene, 12. Heptachlor. http://www.unido.org/doc/29428#pcb
6b. Preservation and improvement of the soil quality	The organization shall: - Carry out measurements yearly and record the results; - Take measures, which are needed to ensure that the experiences applied in the operational management are aimed at the prevention and control of soil erosion, maintenance of the nutrient balance, maintenance of the SOM and the prevention of the soil becoming brackish; - Take measures, which are needed to ensure that the experiences applied in the operational management are aimed at the prevention and control of risks for the soil as a consequence of the use of agrochemicals; - Take measures, which are needed to improve continuously those experiences applied in the operational management; - Establish and record measures in management plans and monitor, measure and analyze these measures; - Document the results.	Measurements include: - Soil loss in tons soil / ha /yr - Soil organic matter top layer - pH top layer - Nutrient balance (N, P and K)	
6c. The use of residual products	The organization shall: - Take measures which are needed to ensure that the use of an agricultural residual products, that are produced during the production and processing of biomass on the PU, is not in violation against other, in dialogue established with stakeholders, local essential functions for the maintenance of the soil and soil quality; - Take measures, which are needed to ensure that residual products of the production process and processing of biomass are used optimally, to prevent unnecessary losses, to limit unnecessary extracting of residual products to remaining local functions and to prevent unnecessary environmental impact; - Establish and record measures in management plans and monitor, measure and analyze these measures; - Establish for which functions the residual products are used that are produced during the production and processing of biomass on the PU; - Document the results.		
7a. National regulations and laws for water management	The organization shall: - Show, as far as applicable, that the national laws and regulations in general are known and the laws and regulations with respect to use of water for irrigation, the use of ground water, the use of water for agrarian purposes in catchment basins, water purification, EIA and company audits in particular; - Take measures which are needed to ensure that the requirements of the mentioned laws and regulations are complied with; - Take measures which are needed to ensure that the changes in applicable laws and regulations and the enforcement of these are established and applied properly.		Stockholm convention on persistent organic pollutants
7b. Preservation and improvement of water quality	The organization shall: - Carry out measurements yearly and record the results - Take measures, which are needed to ensure that the experiences applied in the operational management are aimed at efficient use of water;	Measurements in relation with: - Use of irrigation water in liter/ha/year - Origin of the irrigation water	

	- Take measures which are needed to ensure that the experiences applied in the operational management are aimed at the prevention and control of risks for ground and surface water as a consequence of the use of agrochemicals and other business processes; - Take measures which are needed to ensure that the experiences applied in the operational management where possible are aiming at improving water quality; - Take measures which are needed to improve continuously those experiences applied in the operational management; - Record measures in management plans and monitor, measure and analyze these measures; - Document the results.	and surface water level according to BOD on and near the PU; [130]: the indicator of water quality is not easy measurable. A proposal is to request in the first stage (pilot phase) a 4 page report with information on water quality. Based on the collected information and experiences, hard indicators can be coupled to this criterion.	
7c. Renewable sources	The organization shall: - Take measures, which are needed to ensure that water of non-renewable sources is not used during the production process and processing of biomass on the PU; - Record measures in management plans and monitor, measure and analyze these measures; - Document the results.	Reporting must take place on the origin of irrigation water or water for the processing industry.	
8a. No violation of national laws and regulations for air emissions and air quality.	The organization shall: - Show, as far as applicable, that the national laws and regulations in general are known and the laws and regulations with respect air emissions, waste management, EIA and company audits in particular; - Take measures which are needed to ensure that the requirements of the mentioned laws and regulations are complied with; - Take measures which are needed to ensure that the changes in applicable laws and regulations and the enforcement of these are established and applied properly.		
8b. Reducing emissions and air pollution	The organization shall: - Carry out measurements yearly and record the results in relation with the emission of substances into the air as a consequence of the production and processing of biomass on the PU; - Take measures which are needed to ensure that the experiences applied in the operational management, are aimed at the waste management and minimization of emissions of substances into the air; - Take measures which are needed to improve continuously those experiences applied in the operational management; - Record measures in management plans and monitor, measure and analyze these measures; - Document the results.		
8c. No burning during the installation or management	The organization shall: - No apply the burning of the stubble or stand during the installation or management on the PU, unless it is demonstrated that it is the most effective and less harmful method to minimize the risk of harm by disease and plagues; - Demonstrate when burning is allowed as described under point A. that the burning under controlled conditions has taken place, among what the care for the presence of sufficient means to combat the burning; - Register all incidents, at which rumor has been burning of the stubble, and make report of this during the next audit.		AESAN guidelines on burning and other regional good practice guidelines.
9. Positive contribution of private company activities towards the local economy and activities.	The organization shall: - Establish in their policy plan what is meant by the terms local, local economy, locally settled supply companies, local labor and senior management; - Establish in their policy plan which objectives are aimed for concerning the acceptance of local employees, with specific attention for senior management;	Reporting indicators based on Global Reporting Initiative On the basis of Economic Performance Indicators EC 1, 6 & 7 of GRI >> EC1: Direct economic values that	GRI: Global Reporting Initiative

	- Establish in their policy plan what is meant by the supply of an active contribution to the local economy; - Record which criteria apply during the assessment and selection of the supplier; - Take measures, which are needed to improve continuously those experiences applied in the operational management; - Record measures in management plans and monitor, measure and analyze these measures; - Document the results.	have been generated and distributed, among which income, operational costs, staff remunerations, donations and other social investments, retained profits and payments to financiers and authorities. EC6: Policy, methods and part of expenditure with respect to locally based suppliers at significant locations of operation. EC 7: Procedures for local staff recruitment and share of the top executives originating from the local community at significant locations of operation.	
10a. Working conditions	The organization shall: - Create practices in accordance with the most recent established version of the Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy (compiled by the International Labor Organization) with respect to employment, labor relations, safety and health, training and education, and diversity and equal opportunities, treatment of complaints; - Take measures, which are needed to improve continuously those experiences applied in the operational management; - Record measures in management plans and monitor, measure and analyze these measures; - Document the results.		Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy (compiled by the International Labor Organization)
10b. Human rights	The organization shall: - Create practices in accordance with the UN 'Universal Declaration of Human Rights" concerning non-discrimination, child labor, forced and compulsory labor, disciplinary practices, safety practices, freedom of trade union organization and rights of indigenous peoples ; - Take measures, which are needed to improve continuously those experiences applied in the operational management; - Record measures in management plans and monitor, measure and analyze these measures; - Document the results.		UN 'Universal Declaration of Human Rights"
10c. Property rights	The organization shall: - Take care that all original users of the land that is occupied by the PU, are informed sufficiently about all matters to which the need is made known, unless this is evidently severely detrimental to the competitive position of the organization; - Define the use of land accurately and report and demonstrate unambiguously the long-term rights for the use and of the soil; - Leave the authority over land use to the local community who owns the legal or customary law on the disposal or use of the land, in the degree that is necessary to secure their right and/or sources, unless this community delegate its authority with free and approved approval to 3rd parties; - Take appropriate measures to solve differences in opinion about claims for disposal and right for use; - Leave the authority over the management of their land and areas to the local population, unless they delegate its authority with free and approved approval to 3rd parties; - Not threaten or reduce the sources or the rights for disposal of the local population,	Long-term rights: e.g. lease, customary law	In line with FSC and RSPO: FSC 2 and 3; RSPO 2.3.

	either direct or indirect, as a consequence of the local management; - Identify unambiguous places that are of particular cultural, economic or religious importance for the local population, in dialogue with the local population and let acknowledge and protect by the responsible managers; - Compensate the local population for the application of their traditional knowledge of the use of species of plants or management systems for land use, at which the local population shall agree formally, freely and informed with the compensation for commencement of the exploitation of the PU;		
10d. Contribution to social well-being of local population	The organization shall: - Establish and record in a specified way in which way and degree exploitation of the PU has influence on the local population, such as concerning health and safety in relation with the infrastructure, dangerous substances and materials, emissions and discharges, health and disease, involuntary resettlement, physical and economic displacement, livelihood restoration, local culture, socially and culturally defined gender differences, indigenous peoples and cultural heritage; - Establish which information is needed to determine these influences properly and which authorities and communities have disposal of the information concerned; - Take measures which are needed to combat effectively the extent and force of negative influences and to maximize positive effects and to continuously improve these measures; - Take measures to continuously enlarge the involvement of local people; - Record measures in targeted management plans and monitor, measure and analyze these measures; - Document the results	*SO1* Report whether: * Program is in place to assess impacts on local population; * Programs define data collection and selection community members; * Examples of feedback * No. of operations to which programs apply; * Effectiveness	On the basis of the Social Performance Indicator SO1 of the GRI: (Global Reporting Initiative).
10e. Integrity of the company	The organization shall: - Establish and record which business units are analyzed for risks related to corruption; - Establish and record the total number of employees in the pay of the organization, specified to position, distinguishing between management and non-management positions; - Report separately the % of total number of management and non-management employees who have received anti-corruption training during the reporting period; - Record the total number of incidents, in which employees were dismissed or disciplined for corruption; - Record the total number of incidents at which contracts with business partners were not renewed due to violations related to corruption; - Report any legal cases regarding corrupt practices brought against the corrupting organization or its employees during the reporting period and the outcomes of such cases; - Take measures needed to combat effectively corruption with the organization; - Record measures in targeted management plans and monitor, measure and analyze these measures - Document the results	*SO2: Reporting on:* * Identification business units analyzed for organizational risk related to corruption * % of business units analyzed *SO3 Reporting on:* * Identification and % trained staff on anti-corruption *SO4 reporting on:* Actions taken in response to incidents of corruption	On the basis of the Social Performance indicators SO2, SO3 and SO4 of the GRI (Global Reporting Initiative).

German Biomass Sustainability Ordinance (bioenergy)

General characteristics:	
Status:	In implementation
Geographical coverage:	Germany
Scope:	Bioenergy
Initiator system:	Government

Short summary system or initiative:	Extension system:	
The draft Biofuels Sustainability Ordinance allows setting requirements for sustainability principles and verification procedures.	Principles included:	Y/N
	Criteria included:	Y/N
	Indicators included:	Y/N

Context:

The Renewable Energy Act benefits several types of energy, including biomass. Since 2007, the law of a mandatory biofuel quota (Biokraftstoff-quotengezetz) is effective in Germany. It requires from mineral oil companies that an increasing share of fuels on a biomass basis has to be admixed to gasoline and diesel or sold as genuine biofuel as such. This law follows the EU directive 2003/30/EG which strives for using a share of 5.75% of biofuels compared to the total use. The federal government is authorized to introduce a multiplication factor for the quota depending on the GHG savings of the biofuels. The quota will be counted at an energy level [133].

Status of system:

Sustainability Ordinance for the Electricity Sector [134]:

The Ordinance is designed to grant feed-in-tariffs for electricity production from liquid biomass on the basis of the EU RES Directive requirements. Extra requirements have been introduced to receive the bonus for utilization of renewable biomass resources (+6 Cent/kWh):

- Prove of sustainable production of biomass has to be provided from 1 January 2010 (Certificate)
- GHG reduction of 35% immediately after entering into force.
- Reference point for land use change will be 2005 (instead of 1 Jan 2008).

The ordinance was notified to the EC on 19 March 2009. It covers „bioliquids“on 124 pages and in 77 articles. It entered into force on 24 August 2009. The Bundesanstalt für Landwirtschaft und Ernährung (BLE, Federal Agency for Agriculture and Food) will be responsible for the accreditation of certification agencies.

Biomassenachhaltigkeitsverordnung für Biokraftstoffe BioNachVO (Biomass Sustainability Ordinance for Biofuels) [134]

The ordinance is designed along the same lines as the Sustainability Ordinance for the Electricity Sector described above. It will implement Article 17 of the RES Directive requirements one-to-one covering raw materials cultivated inside or outside the territory of the Community which are used for energy from biofuels and other bioliquids. The Bundesanstalt für Landwirtschaft und Ernährung (BLE, Federal Agency for Agriculture and Food) will be responsible for the accreditation of certification agencies.

Planned activities:

-

Structure system or initiative:	
Juridical basis:	Legislation
Participation:	Voluntary, legal basis
Local stakeholder involvement	
Monitoring performance:	Included, short description
Chain of custody system	Book and claim, track and trace, mass balance
Level of detail CoC system:	A certification system shall establish the specific rules for compliance with the sustainability requirements. Compliance will be shown by way of a certificate issued for a period of one year after the date of the audit by an independent audit body. The certificate shall be issued to the interfaces. Verification should make use of existing certification schemes and their experiences. To ensure reliability certification schemes and audit bodies would need accreditation by the government. A phase in period is necessary for establishment of the systems [135].

Further information on:	
Removal of trade barriers	-
Costs:	-

List of principles included [135]:	
1	The sustainable cultivation of agricultural land
2	The protection of natural habitats
3	A minimum level of CO_2 savings for biofuels.

List of criteria and indicators:

Criteria	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
1a. Biomass is produced in accordance with the principles of good practice pursuant to the laws and regulations governing agriculture, forestry and fisheries or in conformity with the rules of cross-compliance [135].			
1b. Equivalent laws and regulations regarding the principles of good practice or other comparable laws and regulations (e.g. cross-compliance) are in effect in countries outside the scope of application of the regulation and the biomass used in the production of the biofuels has to be produced in accordance with these laws and regulations [135].			
1c. In case there are no equivalent laws and regulations, the following requirements have to be met [135]: • No significant increase in emissions of acidic, eutrophic, ozone-depleting or toxic substances; • No significant deterioration of soil function or soil fertility; • No significant deterioration of water quality and water supply; • No significant deterioration of species and ecosystem diversity and • Environmentally safe use of fertilizers, pesticides and herbicides.			
2a. Biomass used is not grown in nature reserves or in areas of high natural conservation value (HCV) or subsequently declared as such since 2005 [135].	Areas of HCV are areas which, as rare ecosystems, have a significant nature value or serve as habitats for particularly rare species of plants or animals [135].	To be able to identify protected natural habitats, research (in cooperation with FAO and possibly other organizations) is ongoing on the possibilities defining relevant areas, mapping relevant areas, screening land cover & land-use for relevant areas, identifying “no-go” areas and sustainable land-use forms and registering bioenergy land-use areas (coordinates) and monitoring compliance [135].	
3a. Biofuels must have a greenhouse gas reduction potential (GGRP) of at least 30 % and, from beginning of 2011, 40 % as base value. If the GGRP exceeds the base value, the contribution to the energy quota shall be calculated by multiplying the actual quantity of the biofuel in circulation by a specific computation factor (starting from 2011) [135].		GHG emissions have to be proofed on a biomass and conversion specific base. 30% GHG reduction as market entrance barrier. IF the GHG saving potential is higher than a base value, the credit on the quota is calculated with a specific factor, according to the Sustainability decree: Factor = [GHG reduction potential in %] / [average GHG reduction potential in all % of biofuels in the previous year]. Example: 45% / 32% = Factor 1.4 [136] The Ministry for Environment (BMU) and Federal Environment Ageny (UBA) has requested IFEU and Öko-Institut to adapt the GHG methodology for biofuels for biomass for energy and to develop default values as well [12].	

United Kingdom – RTFO (biofuels)

General characteristics:	
Status:	RTFO came into effect on 15 April 2008 [137].
Geographical coverage:	Feedstock worldwide, supply in UK
Scope:	Biofuels from all feedstock
Initiator system:	The Renewable Fuels Agency leading the RTFO: The primary legislation for the scheme was passed in the Energy Act in 2004 [137].

Short summary system or initiative:	Extension system:	
The RTFO requires suppliers of fossil fuels to ensure that a specified percentage of the road fuels they supply in the UK are made up of renewable fuels. As well as obliging fuel suppliers to meet targets for the volumes of biofuels supplied, the RTFO requires companies to submit reports on the carbon emission savings and sustainability of the biofuels [137].	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Y

Context:

The Renewable Transport Fuel Obligation (RTFO) is one of the UK Government's main policies for reducing GHG emissions from road transport and requires suppliers of road transport fuel to supply 2.5%v from renewable sources in 2008/2009. This percentage will increase to 5% in 2010/2011 [8]. The RTFO commenced on 15 April 2008 and is intended to deliver reductions in CO2 emissions from the road transport sector of 2.6 - 3.0 million t per annum [138].

The RTFO Order (2007 No. 3072) imposes a legal obligation on suppliers of fossil fuel for road transport ('obligated suppliers') to produce Renewable Transport Fuel Certificates (RTFCs) demonstrating that an amount of renewable fuel has been supplied which is equivalent to a specified percentage of their total fuel sales. The certificates can be earned from the suppliers' own sales of renewable fuels, or can be acquired from other suppliers of renewable fuels. Alternatively, obligated suppliers can 'buy out' of their obligation by paying a buy-out price to the Office of the Renewable Fuels Agency (RFA). Suppliers of renewable transport fuels who are not obligated suppliers will also be able to apply for RTFCs.

The RFA has a key role in facilitating the sustainable sourcing of biofuels and informing Government about the wider implications of the biofuels market created by the Renewable Transport Fuel Obligation (RTFO). The RFA requires suppliers wishing to claim Renewable Transport Fuel Certificates (RTFCs) to provide a carbon and sustainability (C&S) report [138].

The Government announced on 21 June 2007 that it:

- Aims to reward biofuels under the RTFO in accordance with the carbon savings that they offer from April 2010, provided that this is compatible with WTO rules and EU Technical Standards requirements and other relevant legislation
- Aims to reward biofuels under the RTFO only if the feedstocks from which they are produced meet appropriate sustainability standards from April 2011

The RFA will publish reports of individual supplier performance on GHG savings and sustainability on an annual basis and possibly more frequently.

Status of system:

RTFO came into effect on 15 April 2008. The RTFO has defined targets for the first three years. The targets for biofuel as a percentage by volume of road transport fuel are mandatory, while the targets for sustainability are indicative of expected performance [137]:

	2008/09	2009/10	2010/11
Biofuel use by volume	2.5%	3.25%	3.5%
Environmental sustainability standard	30%	50%	80%
Greenhouse gas emissions reduction	40%	45%	50%
Data capture	50%	70%	90%

Planned activities:

The Government has asked the Low Carbon Vehicle Partnership (LowCVP) to explore the feasibility of a voluntary labeling scheme to allow responsible retailers to show that their biofuels are genuinely sustainable [8].

Structure system or initiative:	
Juridical basis:	Mandatory, sustainability standards are indicative of expected performance
Participation:	The Guidance on Carbon and sustainability reporting has been developed following extensive stakeholder engagement and consultation and detailed piloting

	[138]
Local stakeholder involvement	The principle on land tenure includes a criterion on consultation with local stakeholders and communities.
Monitoring performance:	
Chain of custody system	Where an existing standard operates its own certifiable CoC this should be used to report the carbon and sustainability information. The CoC must be specific to the feedstock and standard it represents. Where the existing assurance scheme does not operate its own CoC, or where the CoC is broken within the supply chain a 'mass balance' approach should be used [138].
Level of detail CoC system:	Accreditation: In order to rely on third party audits, verifiers will need to review proof of relevant accreditation against a qualifying standard, or if the auditors are not accredited, proof of conformance with 'Major Must' criteria in the proposed RFA 'audit norm'. The Guidelines for selecting verifiers are detailed within the Technical Guidance and the Guidance for Verifiers. RFA will not accredit verifiers [139]. Auditing: The reliability of claims made in annual C&S reports must be demonstrated through an independent verification. There are three potential situations which need to be considered [139, 140]: 1. An audit is undertaken within an existing certification scheme which includes a qualifying standard. 2. An audit is undertaken against a qualifying standard outside any formal scheme. 3. An audit is undertaken against the requirements of the meta-standard outside any formal scheme. Verification: Information required from suppliers includes [8]: * GHG savings of the fuels supplied and the methods used; * Details of the origin of the fuels; * Details of the environmental standards observed in the cultivation and processing of crops; * Details of any land use change. The RFA will allow transport fuel suppliers, at least initially, to report that they do not have information on the sustainability or otherwise of their biofuel. The RFA also requires annual, independently verified reports of overall supplier performance from suppliers applying for certificates. These reports will demonstrate suppliers' performance in sourcing sustainable biofuels with good GHG savings [138]. The intention is that full reports will be required after 2011 and that ultimately certain feedstocks or production methods will not qualify for certificates [8]. CoC verification: keep input and output records of the feedstock characteristics entering and leaving the plant or process stage. Description of C&S characteristics described on an invoice or related document. Verification is required for the annual reports. Interviews and observations of processes and controls are likely to form part of the evidence gathered for every RTFO assurance. Assurance process from RTFO [139]: d) Planning and risk assessment e) Assurance strategy development (map risks, develop assurance strategies) f) Execution (test controls, document evidence, reviews, perform substantive testing) g) Conclusions (e.g. prepare assurance statement)

Further information on:	
Removal of trade barriers	
Costs:	

All feedstock considered by-products (such as cooking oil and tallow) are not required to report on the sustainability standard or land use in respect of biofuels produced from these feedstocks. Suppliers are

however still required to report the carbon intensity of such fuels, and this should be derived using the GHG calculation methodology.
The RFA will separately monitor the potential indirect impacts of biofuel production such as indirect land use change or changes to food and other commodity prices [138].

List of principles (requirements) included:	
1	As for GHG savings, the UK system has set targets to the overall level of GHG saving achieved by the biofuel supplied in each obligation period (2008-2009 40%, 2009-2010 45%, 2010-2011 50% etc). The level of GHG saving is an overall target for all fuels and feedstock reported by a fuel supplier [12].
2	Biomass production will not destroy or damage large above or below ground carbon stocks
3	Biomass production will not lead to the destruction of or damage to high biodiversity areas
4	Biomass production does not lead to soil degradation
5	Biomass production does not lead to the contamination or depletion of water sources
6	Biomass production does not lead to air pollution
7	Biomass production does not adversely affect workers rights and working relationships
8	Biomass production does not adversely affect existing land rights and community relations

The reporting scheme is based on a 'meta-standard' approach under which existing voluntary agro environment and social accountability schemes have been benchmarked against the RTFO Biofuel Sustainability Meta-Standard. The Meta-Standard comprises seven environmental and social principles. Existing schemes have been benchmarked to assess the extent to which the feedstock produced in accordance with each scheme can be considered sustainable. Standards that meet (partly) the RTFO meta-standard requirements are (more can be included over time) [138]:

- Combinable Crops Scheme (ACCS)
- Basel criteria for soy (Basel)
- Forest Stewardship Council (FSC)
- Genesis Quality Assurance (QA)
- Linking Environment and Farming Marque (LEAF)
- Roundtable on Sustainable Palm Oil (RSPO)
- Round Table on Responsible Soy (RTRS) – still under development
- Sustainable Agriculture Network/Rainforest Alliance (SAN/RA)

Standards that do not meet Qualifying Standard level: FEDIOL, German Qualität und Sicherheit (QS), GlobalGAP, IFOAM, Proterra, Scottish Quality Crops (SQC), Social Accountability 8000 (SA8000).

Qualifying Standards meet most, but not all, of the RTFO Biofuel Sustainability Meta-Standard criteria. The criteria which are not fully met by a Qualifying Standard are called 'gap criteria'. Suppliers are able to provide evidence of additional supplementary checks against these 'gap criteria' to demonstrate thafeedstock complies with all the Meta-standard criteria [138].

List of criteria and indicators [138]:

Criteria ***Recommendations are not listed***	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
1. Overall level of GHG saving achieved by the biofuel supplied in each obligation period.	Annual GHG saving in g CO2 eq/MJ 2008-2009: 40% 2009-2010: 45% 2010-2011: 50%	The GHG calculation methodology is based on a well-to-wheel approach that includes all significant sources of GHG emissions. See also technical report.	
2-8: Percentage of feedstock meeting a Qualifying Environmental Standard (based on Meta-standard approach)	2008-2009: 30% 2009-2010: 50% 2010-2011: 80%	The percentage of feedstock that meets at least the environmental Qualifying Standard level is calculated as an overall percentage for all feedstock.	
General: Data reporting of renewable fuel characteristics	2008-2009: 50% 2009-2010: 70% 2010-2011: 90%		
2. Preservation of above and below ground carbon stocks (reference date 30-11-2005).	• Evidence that biomass production has not caused direct land use change with a carbon payback time exceeding 10 years. • Evidence that the biomass production unit has not been established on soils with a large risk of significant soil stored carbon losses such as peat lands, mangroves, wetlands and certain grasslands.	Where information on previous land use has been supplied the calculation includes the effect on overall GHG savings. Default values for specific land use changes are based on IPCC guidelines. Information on direct land use changes. Where information is not provided (i.e'unknown' is reported) the calculation does not require the use default value for land use change impacts at this stage.	
3.1Compliance with national laws and regulations relevant to biomass production in the area and surroundings where biomass production takes place.	Evidence of compliance with national and local laws and regulations with respect to: • Environmental Impact Assessment • Land ownership and land use rights • Forest and plantation management • Protected and gazetted areas • Nature and wild life conservation • Land use planning • National rules resulting from the adoption of CBD22 and CITES23. The company should prove that: • It is familiar with relevant national and local legislation • It complies with these legislations • It remains informed on changes in legislation		
3.2 No conversion of high biodiversity areas after November 30, 2005	Evidence that production does not take place in gazetted areas. Evidence that production does not take place in areas with one or more HCV areas Evidence that production does not take place in any areas of high biodiversity.	HCV methodology: • HCV 1, 2, 3 relating to important ecosystems and species • HCV 4, relating to important ecosystem services, especially in vulnerable areas • HCV 5, 6, relating to community livelihoods and cultural values.	The definition of the 6 High Conservation Values can be found at http://www.hcvnetwork.org List of protected areas: UNESCO World heritage sites; IUCN List of Protected Areas categories I, II, III and IV, according to the list available from 200328 or more up to date lists or national data; RAMSAR sites (wetlands under the Convention on Wetlands), according to the available list of more up to date lists or national data.

3.3 The status of rare, threatened or endangered species and high conservation value habitats, if any, that exist in the production site or that could be affected by it, shall be identified and their conservation taken into account in management plans and operations.	Documentation of the status of rare, threatened or endangered species (resident, migratory or otherwise) and high conservation value habitats in and around the production site. Documented and implemented management plan on how to avoid damage to or disturbance of the above mentioned species and habitats.		
4.1 Compliance with national laws and regulations relevant to soil degradation and soil management.	Evidence of compliance with national and local laws and regulations with respect to: – Environmental Impact Assessment – Waste storage and handling – Pesticides and agro-chemicals – Fertilizer – Soil erosion Compliance with the Stockholm convention (list of forbidden pesticides). The company should prove that: – It is familiar with relevant national and local legislation – It complies with these legislations – It remains informed on changes in legislation		Stockholm convention
4.2 Application of good agricultural practices with respect to: – Prevention and control of erosion – Maintaining and improving soil nutrient balance – Maintaining and improving soil organic matter – Maintaining and improving soil pH – Maintaining and improving soil structure – Maintaining and improving soil biodiversity – Prevention of salinisation	Documentation of soil management plan aimed at sustainable soil management, erosion prevention and erosion control. Annual documentation of applied good agricultural practices with respect to: Prevention and control of erosion – Maintaining and improving soil nutrient balance – Maintaining and improving soil organic matter – Maintaining and improving soil pH – Maintaining and improving soil structure – Maintaining and improving soil biodiversity – Prevention of salinisation.	Recommendations only > Records of annual measurements of: – Soil loss in tons soil/ha/y – N,P,K balance – SOM and pH in top soil – Soil salts content	
5.1 Compliance with national laws and regulations relevant to contamination and depletion of water sources.	Evidence of compliance with national and local laws and regulations with respect to: – Environmental Impact Assessment – Waste storage and handling – Pesticides and agro-chemicals – Fertilizer – Irrigation and water usage The company should prove that: – It is familiar with relevant national and local legislation – It complies with these legislations – It remains informed on changes in legislation		
5.2 Application of good agricultural practices to reduce water usage and to maintain and improve water quality.	Documentation of water management plan aimed at sustainable water use and prevention of water pollution. Annual documentation of applied good agricultural practices with respect to: – Efficient water usage. – Responsible use of agro-chemicals – Waste discharge	Recommendations only > Records of annual measurements of: Agrochemical inputs (input/ha/y), such as fertilizers and pesticides (specified per agrochemical) Water sources used (liters/ha/y) BOD level of water on and nearby biomass production and processing.	
6.1 Compliance with national laws and regulations relevant to air emissions and burning practices	Evidence of compliance with national and local laws and regulations with respect to: – Environmental Impact Assessment – Air emissions – Waste management		

	– Burning practices The company should prove that: – It is familiar with relevant national and local legislation – It complies with these legislations – It remains informed on changes in legislation		
6.2 No burning as part off land clearing or waste disposal.	Evidence that no burning occurs as part of land clearing or waste disposal, except in specific situations such as described in the ASEAN guidelines on zero burning or other respected good agricultural practices.		ASEAN guidelines on burning
7.1 Compliance with national law on working conditions and workers rights	Certification applicant must comply with all national law concerning working conditions and workers rights.		
7.2 Contracts	Certification applicant must supply all categories of employees (incl. temporary workers) with a legal contract in which the criteria below are registered.		
7.3 Provision of information	Certification applicant must show evidence that all workers are informed about their rights (incl. bargaining rights		
7.4 Subcontracting	When labour is contracted or subcontracted to provide services for the certification applicant, the certification applicant must demonstrate that the subcontractor provides its services under the same environmental, social and labour conditions as required for this standard.		
7.5 Freedom of association and right to collective bargaining	Certification applicant must guarantee the rights of workers to organize and negotiate their working conditions. Workers exercising this right must not be discriminated against or suffer repercussions.		As established in ILO conventions 87 en 98
7.6 Child labour	Certification applicant must guarantee that no children below the age of 15 are employed. Children are allowed to work on family farms if not interfering with children's educational, moral, social and physical development (the workday, inclusive of school and transport time, to be a maximum of 10 hours).		
7.7 Young workers	The work carried out shall not be hazardous or dangerous to the health and safety of young workers (age 15 -17). It shall also not jeopardize their educational, moral, social and physical development.		
7.8 Health and safety	All certification applicants must meet basic requirements including potable drinking water, clean latrines or toilettes, a clean place to eat, adequate protective equipment and access to adequate and accessible (physically and financially) medical care. Accommodation, where provided, shall be clean, safe, and meet the basic needs of the workers. All certification applicants shall ensure that workers have received regular health and safety training appropriate to the work that they perform. All certification applicants shall identify and inform workers of hazards, and adopt preventive measures to minimize hazards in the workplace and maintain records of accidents. Wageworkers must be paid wages at least equivalent to the legal national minimum wage or the relevant industry standard, whichever is higher.		
7.9 Wages/ compensation	Workers must be paid in cash, or in a form that is convenient to		

	them and regularly.		
7.10 Discrimination	There must be no discrimination (distinction, exclusion, or preference) practiced that denies or impairs equality of opportunity, conditions, or treatment based on individual characteristics and group membership or association like: race, caste, national origin, religion, disability, gender, sexual orientation, union membership, political affiliation, age, marital status, those with HIV/AIDS, seasonal, migrant and temporary workers.		In accordance with ILO Conventions 100 and 111
7.11 Forced Labour	Standards shall require that the certification applicant not engage in or support forced labour including bonded labour. The company must not retain any part of workers' salary, benefits, property, or documents in order to force workers to remain on the farm. The company must also refrain from any form of physical or psychological measure requiring workers to remain employed on the farm. Spouses and children of contracted workers should not be required to work on the farm.		As defined by ILO conventions 29 and 105.
8.1 Land right issues	The right to use the land can be demonstrated and does not diminish the legal or customary rights of other users and respects important areas for local people.		
8.2 Consultation and communication with local stakeholders	Procedures are in place to consult and communicate with local populations and interest groups on plans and activities that may negatively affect the legal or customary rights, property, resources, or livelihoods of local peoples.		

Switzerland – Government (biofuels)

General characteristics:	
Status:	In implementation
Geographical coverage:	Switzerland
Scope:	Biofuels
Initiator system:	

Short summary system or initiative:	Extension system:	
Producers and importers of biofuels wishing to benefit from tax exemption must bring the proof of a positive global ecological balance. The terms of the proof are provided in the Biofuels life-cycle assessment Ordinance (OEcobiC) by the Department of the Environment, Transport, Energy and Communications (DETEC) [141]	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Y
Context:		
As part of the revision of the CO2-Law Revision for post-Kyoto, a climate tax (fiscally neutral or partly earmarked for abatement measures) and the concept of "climate neutrality" will be considered in Switzerland. As per 1 July 2008, biofuels will be exempted (Biofuels Tax Exemption) from the mineral oil tax, provided their production complies with environmental and social criteria [142].		
Status of system:		
Tax reduction for biofuels can be obtained if there is a 40% GWP reduction and <125% of overall environmental impacts (UBP) than the fossil reference system [142]. • The minimum requirements of a positive global ecological balance are considered to be fulfilled for fuels produced out of wastes or biodegradable residues from the manufacturing or processing of agricultural or forestry products, if they were manufactured according to the latest technologies. In this case, no specific evidence of positive global ecological balance is required. The Directorate General of Customs and FOEN define all fuels considered as being obtained from waste or residues [141]. • For all other fuels from renewable raw materials, proof of a positive global ecological balance must be provided so they can benefit from tax reduction. It is considered that biofuels from palm oil, soybeans or cereals do not comply with the minimum requirements. However, if the importer or manufacturer believes that a fuel produced from such materials would satisfy the requirements, they may however submit it to the global ecological balance procedure [141].		
Planned activities:		
-		

Structure system or initiative:	
Juridical basis:	Legislation (in implementation)
Participation:	-
Local stakeholder involvement	
Monitoring performance:	
Chain of custody system	
Level of detail CoC system:	The FOEN generally completes the assessment within 60 days of receipt of all required information and documentation.

Further information on:	
Removal of trade barriers	
Costs:	

To furnish proof of positive aggregate environmental impact, the applicant must provide information on:

List of principles (requirements) included >> information required [141]:	
1	Type of fuel
2	The threats to rainforests and biological diversity
3	the entire fuel production chain from feedstock cultivation to receipt of fuels by consumers
4	Ecological benefits

Criteria [141]	Indicator	Methodology used	Databases used:
1. 1.The applicant must provide information on: • the designations of the fuels; • the quality of the fuels, taking account of recognized standards; • the designations of the renewable feedstocks used to produce the fuels.			
2.1 The applicant must provide information on: • the origin of the feedstocks used, including the exact name and a characterisation of the sites where they are cultivated; • the use of the cultivated area between 1 January 2004 and the date of feedstock cultivation or, as of 1 January 2014, in the ten years preceding feedstock cultivation; • the environmental regulations applicable to the area where the feedstocks are cultivated, including those concerning air pollution control, protection of soil, water, groundwater and biological diversity and protection against invasive species, as well as information on compliance with these regulations; • the observance of good agricultural practices in feedstock cultivation, particularly information on the careful use of plant protection products and fertilizers, on the cultivation and harvesting techniques employed, including crop rotations to maintain soil quality and prevent erosion, and on the selection of appropriate soils and crop species for cultivation.	They are endangered in every case if: • cultivation occurs within nationally or internationally designated protected areas; • cultivation occurs in areas that were part of ecosystems of particular conservation value, such as forests, wetlands and grasslands of great biological diversity, provided the conversion into a cultivated area occurred after 1 January 2004 or, as of 1 January 2014, in the ten years preceding the cultivation of the feedstocks; • The environmental regulations applicable to the area where the feedstocks are cultivated are not complied with; or if the good agricultural practices is not observed in the cultivation of the feedstocks.		
3.1.The applicant must provide information on: • the crop rotation employed in the cultivated area; • the quantitative and economic yields of the crop species used; • the types and quantitative and economic yields of the by-products and wastes generated during harvesting; • the cultivation and harvesting techniques, stating machine usage and energy sources used; • the types and quantities of fertilizers and plant protection products used; • The irrigation techniques employed, as well as the quantity of water consumed and the type of water resource used.	Based on the greenhouse gas inventory, the FOEN assesses whether the fuels give rise to at least 40% less greenhouse gas emissions than petrol of fossil origin.	The ecological scarcity method or other methods of comparable quality in terms of verifiability, traceability and completeness is used in combination with LCA.	Datasets are used from ECOINVENT
3.2.The applicant must provide information on: • the technology used to produce the fuels; • the types and quantities of energy consumed in the process; • the types and quantities of auxiliary substances used; • the types and quantities of products and by-products generated during the production process; • the energy and economic yields of the products and by-products; • the types and quantities of wastes generated in the production process as well as their management; • the greenhouse gases and environmental pollutants released during production of the fuels.			
3.3 The applicant must provide information on: • the processing sites; • the means of transport and distances travelled from the feedstock cultivation site to the site where consumers receive the fuels.			
4.1.In addition, the applicant may provide information on specific ecological benefits of the production process, particularly on measures that: • enhance biological diversity; • enhance soil fertility; • Protect non-renewable water resources.			

Belgium (bioenergy –power and biofuels)

General characteristics:	
Status:	In implementation
Geographical coverage:	Belgium
Scope:	Bioenergy (power, biofuels)
Initiator system:	Belgium government

Short summary system or initiative:	Extension system:	
In Belgium, three regional systems are in use to grant green certificates to promote and to support power production from renewable energy sources. Green certificates are granted according to energy balance of supply chain and reference STAG power plant [143].	Principles included:	Y
	Criteria included:	-
	Indicators included:	-

Context:

In 2005, in order to support the Belgian biofuels market, the Belgian Government has decided an invitation to tender in 2006 a grant tax advantages on 380,000 m³ of biodiesel and on 250,000 m³ of bioethanol for 2006. The tax-exemptions are applicable from 1st October 2007 up to 30th September 2013. One condition is that these volumes have to be commercialized and bought in Belgium [144].

Status of system:

In Belgium, three regional systems are in use to grant green certificates to promote and to support power production from renewable energy sources.

- In the Flemish region, green certificates are granted according to the energy balance of the supply chain by comparison with a reference system being a power plant firing natural gas with an efficiency of 55 %. The obligation in Flanders is 3.75% x 50TWh= 1,875 TWh, 1Green Certificate=125 € [143].
- In Wallonia, there is the obligation (with penalty payments if not fulfilled) for electricity suppliers to produce a certain percentage of 'green' electricity. The result determines the number of green certificates awarded [145]. Green certificates are granted based on proven sustainability according to CO2 balance of the supply chain and the same reference system as in Flanders. The obligation in Wallonia is 7.0% x 23.5 TWh=1.65 TWh, 1Green Certificate=100 € [143]

Each green electricity supplier is submitted to an energetic audit of the supply chain if he wants to obtain green certificates as an obligation from Belgian authorities. The audit aims at investigating sustainability of the raw material production and the energy balance of the whole supply chain [10].

Seven biofuel Belgian producing companies were selected for the production of the tax exempted volumes [144]. The criteria used to select these companies include the minimization of i) pesticides and fertilizers use for the cultivation of raw material and ii) the distance between the raw material cultivation locations and the biofuel production unit. The CO2 balance of the final products (well-to-wheel) and the energetic efficiency of the plant were also taken into account. The selected companies are required to hand in an annual report concerning amongst others the origin raw material [146].

Furthermore, an incorporation obligation of 4% in volume of biofuels in fossil fuels destined for consumption was fixed by the Belgian Government the 22nd July 2009 [146]. One condition to be considered in the above mentioned percentage is to prove the sustainability of the biofuels incorporated when they aren't supplied by one of the seven Belgian production companies selected in the framework of the invitation to tender in 2006. Sustainability level is fixed on 5 principles [146].

Planned activities:

-

Structure system or initiative:	
Juridical basis:	Legislation (mandatory)
Participation:	
Local stakeholder involvement	Stakeholders will have to give access to data to prove the respect of the criteria.
Monitoring performance:	First evaluation in March 2010, based on the data collected until the 31st December 2009.
Chain of custody system	
Level of detail CoC system:	Yearly evaluation includes biofuels sustainability verification.

Further information on:	
Removal of trade barriers	
Costs:	

List of principles (requirements) included [146] for biofuels:	
1	The biofuels should be produced inside the Community. The raw material has to be issued from agriculture and should be cultivated with a minimum pesticides and fertilizers
2	The production of the raw material should respect requirements set out in the framework of the Common Agricultural Policy
3	The raw material should not originate from a non-European region which has been recently deforested
4	The considered biofuels should present substantial CO2 emission savings
5	The production of the biofuels should respect the technical specifications imposed by the European Commission in view of the respect of social and environmental regulations

India – National Biofuels Policy (biofuels)

General characteristics:	
Status:	National policy approved and under implementation
Geographical coverage:	National: India
Scope:	Biofuels
Initiator system:	Ministry of New and Renewable Energy

Short summary system or initiative:	Extension system:	
The National policy on Biofuels is approved on 11 September 2008 [147].	Principles included:	Y (requirements)
	Criteria included:	N
	Indicators included:	N
Context:		
The National Biofuels Policy has an indicative target of 20% by 2017 for the blending of biofuels (biodiesel and bioethanol) by 2017 [147].		
Status of system:		
National policy is approved		
Planned activities:		
National Biofuel coordination committee is established.		

Structure system or initiative:	
Juridical basis:	Regulated by law
Participation:	-
Local stakeholder involvement	-
Monitoring performance:	-
Chain of custody system	-
Level of detail CoC system:	-

Further information on:	
Removal of trade barriers	The National Biofuels Policy proposes [147]: Biofuels may be brought under the ambit of “Declared Goods” by the Government to ensure unrestricted movement of biofuels within and outside the States. It is also stated that no taxes and duties should be levied on biodiesel.
Costs:	The National Biofuels Policy proposes [147]: *Minimum Support Price (MSP)* for biodiesel oil seeds to be announced to provide a fair price to the growers (further worked out by Biofuels Steering Committee); *Minimum Purchase Price (MPP)* for the purchase of bioethanol by the oil marketing companies to be based on the actual cost of production and import price of bioethanol. In the case of biodiesel, the MPP would be linked to the prevailing biodiesel retail price.

List of principles (requirements) included in the National Biofuels Policy [147]:	
1	Biodiesel production will be taken up from non-edible oil seeds in waste / degraded / marginal lands.
2	The focus would be on indigenous production of biodiesel feedstock
3	Import of Free Fatty Acid (FFA) based such as oil, palm, etc. would not be permitted.
4	Biodiesel plantations on community / government / forest waste lands would be encouraged while plantation in fertile irrigated lands would not be encouraged.

Japan – Biomass Mark label (biomass)

General characteristics:	
Status:	In implementation
Geographical coverage:	Japan
Scope:	Products that contain (% of) biomass
Initiator system:	The Japan Organics Recycling Association (JORA) has established the Mark.

Short summary system or initiative:	Extension system:	
The Biomass Mark label is provided to commodities that originate in biomass totally or partly [148].	Requirement included:	Y
	Criteria included:	N
	Indicators included:	N
Context:		
The Japanese Government has decided upon the 'Biomass Nippon Strategy' in December 2002. This strategy aims to utilize biomass as a valuable resource in the society. By promoting biomass, the strategy aims to – amongst others - replace fossil fuel derived energy by carbon neutral energy [149].		
Status of system:		
In implementation.		
Planned activities:		
-		

Structure system or initiative:	
Juridical basis:	Use of Biomass Mark is a voluntary label
Participation:	
Local stakeholder involvement	
Monitoring performance:	
Chain of custody system	
Level of detail CoC system:	The person who wishes to use the Mark applies to JORA (Japan Organic Recycling Association) for each nominated commodity in regard to the use of the mark. The Biomass Mark Recognition Examination Committee – an advisory board of JORA – examines the nominated commodities. After recognition, the commodity can receive the label. The % of biomass (based on proportion of biomass dry weight) can be indicated next to the label [148].

Further information on:	
Removal of trade barriers	-
Costs:	-

List of principles (requirements) to receive the Biomass Mark label:	
1	A biomass mark commodity is a commodity that originates in biomass totally or partly [148].

New Zealand – Biofuels Sales Obligation (biofuels)

General characteristics:	
Status:	Under development
Geographical coverage:	New Zealand (country)
Scope:	Biofuels
Initiator system:	Government New Zealand

Short summary system or initiative:	Extension system:	
The New Zealand government has introduced the Biofuels Sales Obligation as part of a broader policy agenda. There is provision in the Biofuel Bill to implement mandatory sustainability standards for biofuels.	Requirement included:	-
	Criteria included:	-
	Indicators included:	-

Context:
The New Zealand government has announced the introduction of a Biofuels Sales Obligation as part of a broader policy agenda. From 1 July 2008 companies importing petrol or diesel into New Zealand, either direct from overseas or via the refinery, will be required to sell biofuels as a proportion of the energy content of their total annual sales. This obligation will increase year-on-year from 0.53 per cent in 2008 to 3.4 per cent by 2012. There is provision in the Biofuel Bill to implement mandatory sustainability standards for biofuels. This would mean companies supplying biofuels would be required to prove that their biofuel is sourced from suppliers who can demonstrate environmentally and socially acceptable practices [8].
Status of system:
The Energy Efficiency and Conservation Authority (EECA) has committed to implementing a voluntary consumer information scheme in the recently released New Zealand Energy Efficiency and Conservation Strategy (NZEECS) [8]. Report released on consumer information on biofuel sustainability, commissioned by EECA [8] in 2008.
Planned activities:
-

Structure system or initiative:	
Juridical basis:	Legislation under development
Participation:	-
Local stakeholder involvement	-
Monitoring performance:	-
Chain of custody system	-
Level of detail CoC system:	-

Further information on:	
Removal of trade barriers	-
Costs:	The report from [8] gives a rough indication on the costs to set up a scheme for biofuels including reporting on carbon intensity and a qualitative assessment of social and environmental indicators: • Develop technical guidance (draft for stakeholder discussion, consultation, finalization guidance): $ 25,000 • Develop generic consumer information and present product reports: $ 25,000 • Label adaptation (graphic design, drafting agreement, audit cost recovery arrangements): $ 25,000 An indication for the cost for biofuel suppliers is given as well [8]: • Assess product (environmental and social impacts, greenhouse gas emissions): $12-15,000 • Independent audit: $17-25,000 Cost for participation of the label or scheme is not included.

USA on national level: RFS (biofuels)

General characteristics:	
Status:	In implementation / under development
Geographical coverage:	USA
Scope:	Biofuels
Initiator system:	United States Environmental Protection Agency (EPA)

Short summary system or initiative:	Extension system:	
The National Renewable Fuel Standard program (commonly known as the RFS program) forms part of the Energy Independence and Security Act of 2007 (EISA). The Renewable Fuel Standard (Rule) is finalized in May 2007 and modified in December 2007 (RFS2). The RFS2 includes lifecycle GHG reduction thresholds and an existing cropland criterion [150].	Principles included: (requirement)	Y
	Criteria included:	Y
	Indicators included:	Y

Context:

The Energy Policy Act of 2005 required ethanol equivalent volumes of renewable fuel, reaching 7.5 billion gallons per year in 2012. The Energy Independence and Security Act (EISA) (passed by Congress in December 2007) modified the RFS program [150].

Status of system:

RSF2 is accepted by Congress in December 2007 [150]. EISA established specific lifecycle GHG emission thresholds for each of four types of renewable fuels, requiring a percentage improvement compared to lifecycle GHG emissions for gasoline or diesel (whichever is being replaced by the renewable fuel) sold or distributed as transportation fuel in 2005. EISA required a [151]:
a) 20% reduction in lifecycle GHG emissions for any renewable fuel produced at new facilities (those constructed after enactment),
b) a 50% reduction in order to be classified as biomass-based diesel or advanced biofuel,
c) A 60% reduction in order to be classified as cellulosic biofuel.
See also below

Planned activities:

EPA has planned the following activities [151]:

- EPA recognizes that as the state of scientific knowledge continues to evolve in this area, the lifecycle GHG assessments for a variety of fuel pathways will continue to be enhanced. Therefore, the Agency is committing to further reassess these determinations and lifecycle estimates.
- EPA will request that the National Academy of Sciences evaluate the approach taken in this rule, the underlying science of lifecycle assessment, and in particular indirect land use change, and make recommendations for subsequent lifecycle GHG assessments on this subject.

This new assessment could result in new determinations of threshold compliance compared to those included in this rule. These would apply to future production from plants that are constructed after each subsequent rule incorporating a revised lifecycle assessment methodology [151].

Structure system or initiative:	
Juridical basis:	Legislation
Participation:	-
Local stakeholder involvement	-
Monitoring performance:	-
Chain of custody system	-
Level of detail CoC system:	-

Further information on:	
Removal of trade barriers	-
Costs:	-

List of requirements included [150]:	
1	EISA: Renewable fuels must have lifecycle GHGs 20% below gasoline. RFS2: Each fuel category is required to meet mandated GHG performance tresholds reductions compared to baseline petroleum fuel replaced.
2	Existing cropland criterion: renewable fuel must be produced from renewable biomass harvested from land “cleared or cultivated” prior to enactment of EISA.

Note: EISA states that indirect land use change must be included in GHG emission reduction calculations [152].

List of criteria and indicators:

Criteria	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
1a. Conventional biofuels must meet 20% lifecycle GHG threshold	Applies for ethanol derived from corn starch	Only applies to fuel produced in new facilities. For methodology: see technical report	
1b. Advanced biofuel must meet a 50% lifecycle GHG tresholds	Applies for essentially anything but corn starch ethanol, including cellulosic ethanol and biomass-based diesel.	For methodology: see technical report	
1c. Biomass-based diesel must meet a 50% lifecycle GHG threshold; 20-50% still counts as renewable fuel	Applies for renewable diesel if fats and oils not co-processed with petroleum	For methodology: see technical report	
1d. Cellulosic biofuel must meet a 60% lifecycle GHG treshold	Applies for renewable fuel produced from cellulose, hemi-cellulose or lignin.	For methodology: see technical report	

USA: LCFS California (biofuels)

General characteristics:	
Status:	In rule making process, implementation expected in 2010
Geographical coverage:	State California in USA
Scope:	For ALL transportation fuels including biofuels
Initiator system:	California Air Resources Board

Short summary system or initiative:	Extension system:	
The Low Carbon Fuel Standard (LCFS) is a performance standard that is based on the total amount of carbon emitted per unit of fuel energy [153].	Principles included: (requirement)	Y
	Criteria included:	N
	Indicators included:	N
Context:		
California has developed a sectoral strategy to cut GHG emissions with as aim to return to 1990 levels by 2020. Oil refiners and importers are assigned a maximum level of GHG emissions per unit of fuel energy it produces. This level declines each year [153].		
Status of system:		
The California Air Resources Board adopted the LCFS in concept in June 2007 and began a rulemaking process, with the final rule scheduled for March 2009. The LCFS provides three compliance strategies: a) refiners can blend low-GHG fuels, b) refiners can buy low-GHG fuels or c) refiners can trade emission credits among producers [153].		
Planned activities:		
LCFS is expected to be implemented in early 2010 [153].		

Structure system or initiative:	
Juridical basis:	Regulated by Law [153]
Participation:	ARB staff has been working closely with the Energy Commission, Life Cycle Associates, TIAX, and other stakeholders [154].
Local stakeholder involvement	-
Monitoring performance:	-
Chain of custody system	-
Level of detail CoC system:	-

Further information on:	
Removal of trade barriers	LCFS aims for standardization of the measurement protocol across all states (and abroad), which is necessary for the LCFS performance standard to be implemented and enforced fairly and reliably [153].
Costs:	

List of requirements included:	
1	A proposed 10% reduction in lifecycle GHG emissions by 2020 is imposed on all transport fuel providers [153].
2	*Advised:* companies are advised to focus on biofuels with low GHG emissions and minimal indirect land-use effects, fuels created from wastes and residues or from degraded lands, or biofuels produced from algae and renewable hydrocarbons [153].

Note: Broader environmental and social issues are not included as the effectiveness of systems and approaches – as currently developed in the Netherlands or in the UK and Germany – remains uncertain. New and better approaches are needed [153].

USA: State Massachusetts (biofuels)

General characteristics:	
Status:	In implementation
Geographical coverage:	State Massachusetts in USA
Scope:	Biofuels
Initiator system:	Government state Massachusetts

Short summary system or initiative:	Extension system:	
Legislation on tax exemption and blending requirements approved including requirement on 50% GHG reduction of qualifying fuels [155].	Principles included: (requirement)	Y
	Criteria included:	N
	Indicators included:	N

Context:

In August 2008, the State Massachusetts approved legislation to exempt cellulosic ethanol from state gasoline taxes based on the percentage of renewable fuel used. The bill also requires diesel fuel and oil heat distributors to start adding biodiesel or renewable diesel to their fuel blends in 2010. The bill allows state regulators to delay or scale back the blending requirement if there are issues associated with supply or cost [155].

Status of system:

On July 28, 2008, Governor Patrick signed the Clean Energy Biofuels Act, legislation that will encourage the growth of an advanced biofuels industry as part of the growing clean energy technology sector in Massachusetts.

Planned activities:

The Biofuels Mandate will begin July 1, 2010, as provided in the Act. The program and implementation plans of the Mandate can be found on:
http://www.mass.gov/Eoeea/docs/doer/alternative_fuels/Biofuels%20Mandate%20-%20Stakeholder%20Announcement%20081809%20DOER.pdf
The Act includes three major provisions:

- Exempts cellulosic biofuels from the state gasoline excise tax. Massachusetts was the first state in the nation to give a tax incentive for the use of cellulosic biofuels rather than corn-based ethanol.
- Biofuels mandate. Requires a minimum percentage of biofuel as component of all diesel fuel and home heating fuel sold in the Commonwealth, starting at 2% in 2010 and ramping up to 5% by 2013.
- Low Carbon Fuel Standard. Massachusetts is to develop, as a successor to minimum percentage requirements, a Low Carbon Fuel Standard that would reduce greenhouse gas emissions from the transportation sector by 10% and to seek an agreement with the member states of the Regional Greenhouse Gas Initiative (RGGI) to implement the Standard on a regional basis.

Structure system or initiative:	
Juridical basis:	Legislation
Participation:	-
Local stakeholder involvement	-
Monitoring performance:	-
Chain of custody system	-
Level of detail CoC system:	-

Further information on:	
Removal of trade barriers	-
Costs:	-

List of requirements included:	
1	The qualifying fuels must achieve at least a 50% reduction in lifecycle greenhouse gas emissions over petroleum.
2	All fuels will be required to undergo a full lifecycle analysis, which includes "significant indirect emissions" and land use changes.

Ecologo Label / Environmental Choice (biomass for electricity)

General characteristics:	
Status:	In implementation, additional criteria under discussion
Geographical coverage:	North America (Canada and US)
Scope:	Biomass products for energy included are: wood waste, agricultural waste, dedicated energy crops, liquid fuels and clean organically-sourced material separated from municipal solid waste [156].
Initiator system:	Founded in 1988 by the Government of Canada.

Short summary system or initiative:	Extension system:	
Biomass-fuelled electricity is currently considered in the Ecologo^{CM} certification criteria document for Renewable-Low-Impact (CCD-003).	Principles included: (requirement)	Y
	Criteria included:	Y
	Indicators included:	Y
Context:		
The Ecologo^{CM} covers a wide range of product categories, ranging from printing products to office furniture to electricity or fuels.		
Status of system:		
• Various elements of the CCD-003 document on Renewable-Low-Impact are currently under review or under discussion: CCD-003- Certification Criteria Document-Electricity-Renewable Low-Impact-Review, CCD-003 Complete Certification Discussion Document Suite (Sections A-J), (B) Biogas Certification Discussion Document and (C) Biomass Certification Discussion Document • The Certification discussion document on biomass-fuelled electricity considers including various principles related to environmental impact categories and related stressors [156].		
Planned activities:		
-		

Structure system or initiative:	
Juridical basis:	Voluntary
Participation:	An important part of the criteria development process is the four- to eight-week public review period in which comments are solicited from any interested stakeholder and the general public. Comments submitted to the EcoLogoM Program during this period are considered and the criteria revised accordingly.
Local stakeholder involvement	Principle 1 from CCD-003: Sufficient local stakeholder involvement
Monitoring performance:	
Chain of custody system	
Level of detail CoC system:	Label is meeting ISO 14024 standards for eco-labeling. TerraChoice (environmental consultancy) is managing the label. ECP-certified electricity must be generated by facilities that are also certified. Only those components of a multi-sourced power product that fully satisfy all pertinent ECP certification and licensing criteria are allowed to be identified as “ECP-certified” and to carry the EcoLogo.

Further information on:	
Removal of trade barriers	-
Costs:	Total costs for certification depend on the specific product or service and the licensing package. • Initial verification and audit: Variable, typically $1,500 – $5,000. Price depends on type and number of products. • Subsequent verification for additional products/services: Variable, typically $250 - $2,000. Price depends on type and number of products. <u>Annual License Fees:</u> EcoLogo: 0.5% of product sales – minimum fee of $1200 per product category to a pre-approved, negotiated maximum fee/ceiling. Only the sales associated with products qualified and certified by the EcoLogo Program are used in the

	fee calculation formula.

List of requirements included in CCD-003 [157]:	
1	• be accompanied by evidence that appropriate consultation with communities and stakeholders has occurred, issues of concern have been reasonably addressed, and, where applicable, reasonable mitigation of negative impacts has been addressed; • be accompanied by evidence that prior or conflicting land use, biodiversity losses and scenic, recreational and cultural values have been addressed during project planning and development; • be accompanied by evidence that the project will not result in irreparable/immitigable degradation or loss of the site's heritage, cultural, recreational and/or touristic values; • be generated in a manner that is reliable and practical (e.g. not in research and development stages, actually generating electricity); • be generated by only that proportion of fuel heat input attributed to eligible renewable sources in order to be designated as ECP-certified; • be generated in a manner such that no adverse impacts are created for any species designated as endangered or threatened; and meet the criteria and associated definitions in this criteria document that are applicable to the generation technology employed.
2	To meet the requirements of this Criteria document, **biogas-fuelled electricity** and **biomass-fuelled electricity** must be generated in such a manner that the total of load points assessed for operational air emissions of carbon monoxide (CO), particulate matter (PM), nitrogen oxides (NOX measured as NO2 and sulphur oxides (SOX measured as SO2) does not exceed 6*.
3	if generated from **wood-wastes and/or agricultural wastes**, and in cases where the generator and the waste source share common ownership: i) use only wood-wastes and/or agricultural wastes that have been sourced from operations that have implemented a sound environmental management system and are adhering to sound environmental management practices, ii) ensure the rate of harvest does not exceed levels that can be sustained, and iii) not use wastes from species that are listed in the CITES Appendices;
4	if generated from c**lean biomass fuel sources containing salt-laden wood, de-inking sludge or spent pulping liquors** from mills using elemental chlorine bleaching, the facility must not emit polychlorinated dioxins and/or furans in excess of one of the following, whichever may be lower: i) 100 pg I-TEQ/m3; or ii) the limits for new pulp and paper boilers burning salt-laden wood as specified in the Canada Wide Standards for Dioxins and Furans (Canadian Council of Ministers of the Environment)
5	if generated from **dedicated energy crops**: Use a) only dedicated energy crops that have been sourced from operations that have implemented a sound environmental management system and are adhering to sound environmental management practices, and b) ensure the rate of harvest does not exceed levels that can be sustained.

* In cases where the biogas is used as a partial substitute in a generation facility that is designed to primarily utilize non-renewable fuels, load point calculations will be based only on those operational air emission values that may be allocated to the combustion of the biogas. In cases where the clean biomass is used as a partial substitute in a generation facility that is designed to primarily utilize non-renewable fuels, load point calculations will be based only on those operational air emission values that can may be allocated to the combustion of the clean biomass.

List of additional requirements under debate in discussion document on biomass-fuelled electricity [156]:	
1	Greenhouse Gas Emissions: at least 60%?
2	Resource conservation
3	Excluding biomass from GMO or not?
4	Following organic standards
5	Diminishing risk of eutrophication
6	Minimum level of efficiency in % for facilities
7	Diminishing risk of using logging residues: limited percentage of use?
8	Forest protection: exclude biomass from dedicated energy crops that have been grown on cleared land with a high biodiversity and carbon value?
9	Certify electricity derived from biomass from staple foods (use of food crops)?
10	Is it needed to include as principle the risk for methanol toxicity (liquid fuels)?

List of criteria and indicators CCD-003 [157]:

Criteria	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
2a. the total of load points assessed for operational air emissions of carbon monoxide (CO), particulate matter (PM), nitrogen oxides (NOX measured as NO2 and sulphur oxides (SOX measured as SO2) does not exceed 6.	Sum emissions < 6	Frequency of monitoring and calculation of total load points is described in annex from [157]. Methodologies for estimating emissions are: Carbon monoxide (CO) (i) Reference Method for the Monitoring of Gaseous Emissions from Fossil Fuel-fired Boilers, Reference Method EPS 1/RM/15, September 1990; or (ii) Continuous Emissions Monitoring (CEMS) Code (REF. 107), Alberta Environment; or (iii) Reference Method for Source Testing: Measurement of Releases of Carbon Monoxide from stationary sources (EPS 1/RM/4, 1990) in conjunction with Reference Method for Source Testing: Measurement of Release of Particulate from Stationary Sources (EPS 1/RM/8, 1993), both from Environment Canada; or (iv) Method 10, Determination of Carbon Monoxide Emissions from Stationary Sources, in the Alberta Stack Sampling Code (REF. 89), Alberta Environment. Nitrogen oxides (NOX) measured as NO2 (i) Reference Method for the Monitoring of Gaseous Emissions from Fossil Fuel-fired Boilers, Reference Method EPS 1/RM/15, September 1990; or (ii) Method 7E, Determination of Nitrogen Oxide Emissions from Stationary Sources, in the Alberta Stack Sampling Code (REF. 89), Alberta Environment; or (ii) Continuous Emissions Monitoring (CEMS) Code (REF. 107), Alberta Environment. Particulate matter (PM) (i) Reference Method for Source Testing: Measurement of Releases of Particulate from Stationary Sources, Reference Method EPS 1/RM/8, December 1993; or (ii) Method 5, Determination of Particulate Emissions from Stationary Sources, in the Alberta Stack Sampling Code (REF. 89), Alberta Environment. Sulphur oxides (SOX) measured as SO2 (i) Reference Method for the Monitoring of Gaseous Emissions from Fossil Fuel-fired Boilers, Reference Method EPS 1/RM/15, September 1990; or (ii) Continuous Emissions Monitoring (CEMS) Code (REF. 107), Alberta Environment; or (iii) Reference Method for Source Testing: Measurement of Releases of Sulphur Dioxide from Stationary Sources, Report EPS 1-AP-74-3, September 1975; or (iv) Method 6C, Determination of Sulphur Dioxide Emissions from Stationary Sources, in the Alberta Stack Sampling Code (REF. 89), Alberta Environment	

Brazil: Social Fuel Seal (biofuel)

General characteristics:	
Status:	In implementation
Geographical coverage:	Brazil
Scope:	Biodiesel and feedstock resources
Initiator system:	National Biodiesel Program – Government of Brazil

Short summary system or initiative:	Extension system:	
The Social Fuel Seal is an instrument that gives biodiesel producers incentives to source their raw materials from smallholders and family farmers. Tax breaks are determined by a) the kind of farmer the producer sources from, b) region in which the farmers produces the oil-rich crops, c) by the crop type and d) the share of feedstock sourced from particular categories of farmers as % of total amount [158].	Principles included: (requirement)	Y
	Criteria included:	N
	Indicators included:	N
Context:		
The Social Fuel Seal is developed to break with the problems (social and environmental) inherent to the older Bioethanol Program. The Social Fuel Seal is tied to Brazil's National Biodiesel Program. PRONAF (see below) is integrated in a broader set of social programs in Brazil aimed at reducing rural poverty [158].		
Status of system:		
The Social Fuel Seal Program is joined (so far) by seven major Biodiesel producers. They are cooperating with more than 20.000 rural families registered in the scheme. They cover in total 1.5 million hectares and will supply a mandated mixture of 2% biodiesel to the market [158].		
Planned activities:		
-		

Structure system or initiative:	
Juridical basis:	
Participation:	The farmers that are subject of the policy are registered within a framework called "Programa Nacional de Fortalecimento da Agricultura Familiar" (PRONAF), managed by the Ministry of Rural Development [158].
Local stakeholder involvement	Farmers are assisted and stimulated into joining their forces by creating Family Farmer Cooperatives [158].
Monitoring performance:	The producer's project is evaluated on a yearly basis but is normally granted the Social Fuel Seal for a period of 5 years [158].
Chain of custody system	The biodiesel producer is evaluated on a yearly basis by external agencies, managed by the Ministry of Rural Development. External controls of the feedstock traffic are enhanced by sampling techniques and satellite data. All feedstock sales and acquisitions are registered by the biodiesel producer and the small farmer [158].
Level of detail CoC system:	-

Further information on:	
Removal of trade barriers	
Costs:	Both the small farmers and the biodiesel producer can tap special credit lines and low interest loans from designated banks and financial agents. The biodiesel producer will have to weigh the costs to meet the requirements (i.e. training, extension service) against the tax exemption to be received [158].

The tax breaks are determined by [158]:	
1	The biodiesel producer sources raw materials from smallholders and family holders. A minimum amount of feedstock from small holders and family holders is defined, specified to region and feedstock type.
2	The farmers receive technical assistance and agricultural training (that enhances food security and production) organized by an extension service, financed by the biodiesel producer.
3	The biodiesel producers must enter into formal contracts with feedstock producers and follow a strict negotiation procedure. He must allow the presence of a rural union representative during negotiations.
4	The biodiesel producer must allow a yearly evaluation of the project by external agencies.

Green Gold Label GGL (biomass for electricity)

General characteristics:	
Status:	In implementation
Geographical coverage:	No limitations for origin biomass feedstock.
Scope:	Biomass used for power generation (business to business)
Initiator system:	Its foundation was an initiative of the Dutch energy company Essent in consultation with several stakeholders.

Short summary system or initiative:	Extension system:	
The GGL aims at a traceable system for biomass from (by-) products from the power plant (and its green power it produces) back to the sustainable source. The system is laid down in 8 different GGL standards [159]: GGLS1 - Processing and Trade standard for biomass; GGLS2 - Agricultural Source Criteria; GGLS4 - Product certificate version; GGLS5 Forest Source Criteria; GGLS6 - Standards for Power Companies; GGLS7 - Standard Conservation Stewardship; GGLS8 - Green House Gas calculations	Principles included:	Y
	Criteria included:	Y
	Indicators included: Indicators included in separate checklist.	Y
Context:		
GGL was developed in reaction to an increased government focus on creating renewable fuels for reduction of the fossil CO2 emissions. A certification program with a quality mark was deemed necessary to replace fossil fuels by biomass.		
Status of system:		
In implementation for companies that provide biomass to the company Essent. At present 11 biomass suppliers have a certificate [160].		
Planned activities:		
GGL aims to open its program to other companies other than Essent. GGL considers including NTA criteria (see Netherlands government) in its sustainability standards. The NTA criteria might be embedded into two GGL versions: Certified and Controlled, the first one being stricter than Controlled. Both systems will be mainly oriented to the origin of the biomass supplied [161].		

Structure system or initiative:	
Juridical basis:	Voluntary. A requirement from Essent to its producers.
Participation:	The foundation has its own board (not accredited) and advisory board. The advisory board comprises different stakeholders that represent social, environmental and economical interests [160], which are more or less equally represented. The standard and decision setting procedure is not clearly described [160].
Local stakeholder involvement	GGLS7 requests stakeholder consultation (e.g. Maintenance of and conversion to high (er) conservation value areas must be supported by relevant and recognized national and local stakeholders). GGLS2 is not explicit in stakeholder consultation processes. The foundation handles appeals.
Monitoring performance:	Robust CoC in place to ensure transfer of information. Auditing takes place on a yearly basis.
Chain of custody system	Mass balance system for biomass from the sustainable source to the plant (and the green power it produces)
Level of detail (CoC) system:	Organization: GGL is owned by the GGL foundation. Control Union executes the audits and certification. Certification bodies need to be accredited for ISO65 for GGLS1, S4 and S6 (not for S2 and S5). Verification: GGL has endorsed several certification schemes to ensure sustainable feedstock production (e.g. Organic or GLOBALG.A.P. for agriculture). An audit is performed to assess if a GGL testimony of approval can be granted. The standards GGLS2 and GGLS5 are in practice hardly used. The minimum verification frequency is once per year. A certificate remains valid for 16 months from the certification date [162]. The accreditation body is ISO certified [163] and granted by the Dutch Accreditation Council: the only accreditation organization working in the Netherlands [160].

	GGLS5 is derived from existing and internationally recognized forest management standards (FSC, PEFC, CSA SFM, and SFI). GGLS5 has not been developed to replace the existing standards, rather to enable participating parties and stakeholders to perform a quick-scan assessment on sound forest management practices. An audit based on these principles with a positive result will lead to a "testimony of approval" as a GGL approved source. Approval under these criteria is valid for a maximum of 4 years. After this 4 year period a GGL approval can only be given if a pre-scope route towards certification is initiated under one of the independent approved forest management certification systems [164]. CoC system: In every link of the CoC, written proof must be available that the GGL quality system is maintained, supported or sustained. Mixing or contamination with non-intrinsic or environmentally harmful materials is prohibited. The MB system features certification and inspection of transport and storage. Participating operators are certified against GGLS1 (on CoC and processing). The scheme does not support group certification (of small holders).

Further information on:	
Removal of trade barriers	
Costs:	Costs for certification include the visit to the production locations (in this case mainly pelletisers) + travel and subsistence costs + reporting costs. The visit to the location takes about 1 to 1, 5 days. The efforts for a company to get certified the first time depends on [161]: • The status of the quality handbook / quality system; • If it is a new production location: technical improvements in the company (at this stage less attention to the daily practices of the quality handbook); • The convincement of the company to get certified; in general it requires more time to improve required items in companies that are less convinced of the certification requirements (which might take more time and therefore cost more money).

List of principles included [165, 166] (only standards related to sustainability are listed below):	
GGLS2 – Agricultural source criteria	
GGLS2-1	The agriculture management system is part of an integrated long term planning program (either individually or organized in a group), aimed at development and sustainability.
GGLS2-2	The agriculture management system is based on land-resource planning.
GGLS2-3	The agriculture management is aimed at land conservation and rehabilitation.
GGLS2-4	The agriculture management is aimed at the insurance of freshwater supply and quality for sustainable food production and sustainable rural development.
GGLS2-5	The agricultural management system has implemented integrated pest management and control.
GGLS2-6	The agricultural management system has implemented sustainable plant nutrition to increase food production.
GGLS5 - Forest Management Criteria [164]	
GGLS5-1	Long term tenure and use rights to the land and forest resources.
GGLS5-2	Management plan
GGLS5-3	Environmental impact
GGLS5-4	Monitoring and assessment
GGLS5-5	Plantations
GGLS5-6	Other sources than natural forests and plantations. (woods <5 ha, lanes and parks)
GGLS7 – Conservation Stewardship Criteria	
GGLS7-1	The biomass removed during the conversion and restoration of an agricultural or forestry area to a non-agricultural or to a non-forestry area having enhanced conservation value over the original land, as well as the biomass extracted as a result of maintenance of this nonagricultural or non-forestry land having enhanced conservation value.
GGLS7-2	Biomass material coming from public spaces, parks and green spaces in built-up areas can be treated as Green Gold Label if sustainably managed based on the defined criteria.
GGLS8-1	The GHG and energy balance of the production chain and application of the biomass must be positive. *Not yet a requirement to the biomass providers [161].*

The GGLS7 certificate has a term of four years, and is revalidated by annual audits.

List of criteria and indicators [165, 166]:

Criteria	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
S2-1a. A long term commitment to adhere to the principles and criteria for sustainable agriculture, expressed in a written and up to date agriculture management plan or other management documents.			
S2-1b. Policy reviews are carried out periodically.			
S2-1c. A policy is implemented to influence tenure and property rights of local small holders positively, with respect to the minimum size of land-holding.			
S2-1d. The management plan is dealing with the policy on improvement of production, harvesting, storage, processing, distribution and marketing of products on local, national and regional level.			
S2-1e. Storage and distribution problems, affecting food availability are identified and dealt with in the management plan.			
S2-2a. Collection and continuous monitoring of utilization of natural resources and living conditions are used for the land resource planning (either individually or on a regional basis).	Data about; climate, water and soil, land use, vegetation cover and distribution, animal species, utilization of wild plants, production systems and yields, costs and prices and, social and cultural considerations affecting agriculture and adjacent land use are collected on a regular basis.		
S2-2b. Participation in the initiation and maintenance of district and village agricultural land resource planning assisted by management and conservation groups.			
S2-3a. Land degradation is surveyed on a regular basis.			
S2-3b. Land and conservation areas at risk are identified and the policy and management measures are formulated.			
S2-3c. The general planning, management and utilization of land resources and the preservation of soil fertility are defined and executed			
S2-4a. Efficiency and productivity of agricultural water use for better utilization of limited water resources has to increase.			
S2-4b. Monitoring of the irrigation performance.			
S2-4c. Proper dispose of sewage and waste from the farm and human settlements and of manure produces by intensive life stock breeding.			
S2-4d. Water quality has to be monitored on biological, physical and chemical quality.			
S2-4e. Measures have to be taken to minimize soil run-of and sedimentation.			
S2-4f. Irrigation has to be planned in a long term program.			
S2-4g. Long term strategies and implementation program have to be developed on water use under scarce conditions.			
S2-4h. Waste water re-use has to be part of the agriculture management system.			
S2-5a. The management system is based on an integrated system of pest control.			
S2-5b.The use of banned pesticides is prohibited.			
S2-5c.The use of restricted pesticides is controlled and an administration is kept up to date. Stock is kept in a separate and locked storage.			

S2-5d. Biological control agents and organic pesticides, as well as traditional knowledge and skills regarding alternatively non-chemical pest control have to be identified and implemented in the agricultural management system.			
S2-6a. The management plan is based on an integrated plant nutrition approach.			
S2-6b. The availability of fertilizer and other plant nutrient resources are optimized.			
S5-1a Owner /forest manager demonstrates clear evidence of legal land use by having legal land title, customer right or lease agreement.			
S5-2. The forest management shall be supported by a documented plan. The long term objectives of the management and the means of achieving them shall be clearly stated. The management plan and supporting documents shall provide: - Management objectives* in the form of a policy dealing with; - A description of the forest resources to be managed, environmental limitations, land use and ownership status, socio-economic conditions, and a profile of adjacent lands. - Information gathered through resource inventories and a description of silvicultural and/or other management system** based on the ecology of the forest.	*Management objectives include sustainability of the forest and all its functions; sustainability of the environment and sustainability of economic viability. **Description of management system includes: rational rate of annual harvest and species selection; provisions for monitoring of forest growth and dynamics; environmental safeguards based on environmental assessments; plans for the identification and protection of rare, threatened and/or endangered species; maps describing the forest resource base including protected area/sites planned management and land ownership and description and justification of harvesting techniques and equipment to be used.		
S5-3. The forest management is aimed at conservation of biological diversity and forest integrity, water resources, soils, unique ecosystems and landscapes The following issues are included in the management plan: a. Environment in general b. Roads, waterways and air routes: c. Harvests: d. Re-forestation including re-forestation method (machines, etc.), re-forestation policy; natural renewal (selection of tree species, genetic characteristics, plants, etc.), re-forestation (own work or contracting out), general maps of re-forestation areas. e. Pollution control, including policy on the use of chemicals, soil improvers, lubrication oil, etc, overview of machines used, fuels and lubricants used; maintenance plan and safety aspects and procedures.	a. This includes description of current biodiversity; current or future protection measures for flora and fauna and flora and fauna management; Protective forest varieties, plants and animals (overviews, areas); Climate, topography, soil types, rainfall catchment areas, etc; Measures taken to prevent erosion, improve soil conditions, etc; General maps indicating those areas that should be labeled as 'protected'; Disease and pest management; Use of synthetic or chemical pesticides; Observational data of re-forestation. b. Including general maps of present, projected and past routes; Waterways; Mountains, slopes, gradients; Areas susceptible to erosion; Procedures for planning, design and maintenance. c. This includes evidence of tree felling permits; statement of sustainable forest management; procedures for tree felling and transport of timber (clearance plan); overview of machines and tools; selection procedures and calculations of AAC (annual admissible cutting); rotation of tree felling locations; a long-term harvest scheme and a strategic (short-term) timber harvesting plan (selection, felling and timber clearance plan; products, species, areas, lot numbers of trees that have been or are due for felling (stump and tree), potential end products, national and international export or local use; overview of timber harvesting plans (expected dates) and potential influencing factors.		
S5-4 Monitoring shall be conducted to assess the condition of the forest, yields of the forest products, and management activities. The results of monitoring shall be incorporated into the implementation and revision of the management plan.	4.2 The following indicators should be included in the monitoring system: yield of all forest products harvested; growth rates, regeneration and condition of the forest; composition and observed changes in the flora and fauna; environmental impacts of harvesting and other operations;		

	costs, productivity and efficiency of forest management.		
S5-5a Plantations shall be planned and managed in accordance with the principles 1-4, and principle 5. They should complement the management of, reduce pressures on and promote the restoration and conservation of natural forests.			
S5-5b For existing plantations the management has to demonstrate, that the plantation was not established by converting a forest.			
S5-6a The management of sources other than natural forests and plantations has to meet Principle 1 of the GGL SFC.			
S5-6b Management of sources other than natural forest and plantations shall conserve the ecological, social and cultural functions and integrity.			
S5-6c The management shall be supported by a documented plan. The long term objectives of the management and the means of achieving them shall be clearly stated			
S5-6d The management plan and supporting documents shall provide: 1 Management objectives 2 Description of the woods, lanes and parks to be managed, etc. 3 Description of silvicultural and/or other management system - Description and justification of harvesting techniques and equipment to be used.	1) Objectives in form of a policy dealing with; Sustainability of the woods, lanes and parks and all its functions, sustainability of the environment. 2) Based on the ecology of the woods, lanes and parks in question and information gathered through resource inventories.		
S5-6e. The environmental impact of the management on woods; lanes and parks shall be managed.			
S5-6f The following issues shall be part of the management plan: 1. Environment in general: 2. Harvests/maintenance: 3. Re-planting: re-planting method (machines, etc.), re-planting policy: Natural renewal (selection of tree species, genetic characteristics, plants, etc.), re-planting (own work or contracting out), general maps of re-planting areas, pollution control: 4. Policy on the use of chemicals, soil improvers, lubrication oil, etc, overview of machines used, fuels and lubricants used, maintenance plan, safety aspects and procedures.	I. including: Flora and fauna management, Measures taken to prevent erosion, improve soil conditions, General maps indicating those areas that should be labeled as 'protected', Disease and pest management, use of synthetic or chemical pesticides and observational data of re-planting. 2. Including evidence of tree felling permits and agreements with the local community or other parties involved in forest operations, procedures for tree felling and transport of timber (clearance plan), overview of machines and tools, long-term maintenance scheme and a strategic (short-term) maintenance, overview of maintenance plans (expected dates) and potential influencing factors.		
S7-1a. The area to be converted must not contain high conservation value forest or areas of high conservation value.	This standard also includes biomass material that is removed from a high conservation value area as a result of maintenance that is performed in order to keep the area in the desired state of higher conservation.		HCV areas are defined as areas of outstanding and critical importance due to their environmental, socio-economic, biodiversity + landscape values (WWF).
S7-1b. Conversion and maintenance must achieve clear, additional and long term conservation benefits.			
S71-c. There is a long term commitment to adhere to the principles and criteria for sustainable conservation, expressed in a written and up to date management plan or in other management documents.	Management plan on long term sustainable conservation available.		
S7-1d. The relative conservation value of the area before and after conversion must be clearly demonstrated.			
S7-1e. The positive effect of maintenance on the conservation value of the area must be clearly demonstrated.			
S7-1f. The extent to which the converted area provides enhanced conservation benefits in terms of the landscape must be taken into			

account.			
S7-1g. Maintenance of and conversion to high (er) conservation value areas must be supported by relevant and recognized national and local stakeholders.			
S7-1h. The system and techniques to be used for conversion, restoration and maintenance have been proven successful on that management unit or on comparable areas.			
S7-1i. Conversion and maintenance does not affect the availability of food to local Inhabitants.			
S7-1j. Conversion recognizes traditional uses of the land by local communities and compensation is negotiated in a fair and transparent way.			
S7-1k. The management plan details the methodology for identifying local communities and individuals who may be adversely affected by the conversion.	Management plan details methodology for identifying local communities and individuals		
S7-1l. Management plan details process to be used for negotiating and making compensation in fair and transparent way. This may be by financial compensation or by planting of similar crops in suitable location accepted by all parties)			
S7-1m. All work is carried out in accordance with industry best practice and takes into account a risk assessment of the site.			
S7-2a. Maintenance must achieve clear, additional and long term conservation benefits.			
S7-2b. There is a long term commitment to adhere to the principles and criteria for sustainable conservation, expressed in a written and up to date public green maintenance and management plan or in other management documents.			
S7-2c. The positive effect of maintenance on the conservation value of the area must be clearly demonstrated.			
S7-2d. Conversion may only take place where the manager can clearly demonstrate that none of the areas to be converted can be considered to contain high conservation values.			
S7-2e. The system and techniques to be used for conversion and maintenance have been proven successful on comparable areas.			
S7-2f. All work is carried out in accordance with industry best practice and takes into account a risk assessment of the site.			
S8-1a. Minimum level of GHG saving for certification	- 50% GHG reduction for biomass for electricity and heat - 70% GHG reduction for biomass for electricity and heat when referring to Dutch electricity mix - 60% GHG reduction for biogas - 50% GHG reduction for biofuels	For GHG methodology: see technical report	According to NTA 808
S8-1b. Minimum level of energy saving for certification	Biomass for electricity: 35% Biofuels: 35%	For methodology: see technical report	According to 'Besluit Vlaamse regering..'from 05.03.2004

International Sustainability and Carbon Certification ISCC (biofuels)

General characteristics:	
Status:	In field testing phase [167].
Geographical coverage:	Global
Scope:	Multi-feedstock approach (feedstocks for biofuels) for entire value chain [168]
Initiator system:	The consultancy firm Méo Corporate development GmbH is implementing the project. The system is supported by the German Federal Ministry of Agriculture/Agency for renewable resources [167].

Short summary system or initiative:	Extension system:	
The overall objective of the project is to test an international, pragmatic certification system, with the lowest possible administrative burden, that reduces the risk of non-sustainable production and can be used as a proof of GHG emissions of biofuels taking account of their entire life cycle [168].	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Y (not available)
Context:		
As a reaction on the sustainability requirements set by the German Sustainability Regulation (BionachV) and the EU directive on the promotion of Renewable Energy Sources [167].		
Status of system:		
Under development since Nov 2006, pilot implementation February 2008 - February 2010 [168]. The ISCC system has been tried in a test phase, carried out in Europe, Latin America and in Asia. The system is continuously developed further [167]. Achieved so far: Global generic ISCC Check list tested and ready for use Audit rules elaborated Crop and region specifics to be included Prototype data base elaborated and tested for registration Check list for CoC audit elaborated		
Planned activities:		
ISCC aims to include conventional markets as well in its system (not only bioenergy but a broader range of end products). The standard will describe how results are to be interpreted and which conclusions are to be drawn from specific results [167]. The ISCC project started in 2008 and will last 2 years, ending in beginning of 2010. Pilot implementation from 2008 to 2010 [136].		

Structure system or initiative:	
Juridical basis:	Participation to the label is voluntary. The requirements set are mandatory according to the German and European governmental requirements [168].
Participation:	ISCC aims to create a certification system jointly with partners in Europe, Brazil, Argentina, Malaysia and Indonesia which enables the verification of sustainability and the reduction in GHG for the most important resources and bioenergies throughout the lifecycle. Multi-stakeholder approach is used in the development of the ISCC verification checklist [167].
Stakeholder requirements system:	Requirement of complaint form and self-assessment. No specific criteria on stakeholder consultation.
Monitoring performance:	
Chain of custody system	Mass balance along the supply chain. Other approaches to traceability may also be integrated [167]. Book & claim, mass balance, and track & trace field tested. Segregation of carbon reporting from sustainability reporting.
Level of detail CoC system:	Independent auditors will use an ISCC checklist for the auditing. The certification is achieved cost efficiently via lean organizations and builds on standardized value chains. ISCC endorses already existing systems, if they comply with the requirements (meta-standard) [167]. Ongoing: Improvement of existing audit tools and procedures, develop and offer training for auditors [169]. Verification process and guidelines for auditors

	to verify data and gather data will be prepared [169]. Accreditation: Accreditation by a member of the Accreditation Council and acceptance by BLE and EU as certification system are the next steps [169] Verification: The producer or producer group takes responsibility to undertake a minimum of one self-assessment or producer group internal inspection, respectively, per year against the ISCC Checklist. A complaint form and/or procedure are available for farm employees and surrounding communities. Verification of compliance along the whole value chain of a bioenergy product [168]. (CoC) audit will include check on documentation, records, input identification and storage mass balances [169]. Control point categories will be divided into Major and Minor musts and Recommendations [169].

Further information on:	
Removal of trade barriers	Since the system is developed as a meta standard approach, it can remove trade barriers in so far as all systems meeting the minimum standards of ISCC can be acknowledged [168]
Costs:	The initiative aims to keep administration requirements as low as possible.

List of principles included [168]:	
1	No conversion of high conservation value (HCV); minimization of deforestation/ loss of biodiversity
2	Minimization of GHG emissions
3	Soil protection
4	Water protection
5	Responsible use of agrochemicals
6	Good social practice regarding human rights/ labour rights compliance
7	Land rights compliance
8	Priority for food supply/food security
9	Record-keeping and self-assessment/internal inspection
10	Traceability

List of criteria and indicators [168]:

Criteria	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
P1a. New plantings since November 2008 have not replaced primary forest or any area required to maintain or enhance one or more High Conservation Values (HCV); biofuels are not made from raw material which has been: a) obtained from land with recognized high biodiversity, such as forest undisturbed by significant human activity, b) designated conservation areas, unless evidence is provided that the production of that raw material did not interfere with those purposes, c) obtained from grassland, which is species-rich, not fertilized and not degraded; d) obtained from wetlands and pristine peat land;			
P1b. land not currently used for production must be maintained and the deterioration of habitats must be avoided; environmental impact assessment (EIA) of new buildings, drainage systems; if building or drainage construction activities are conducted at the farm, documents must prove that environmental aspects have been considered; protected plant species must not be deliberately taken away, collected or destroyed; alien species must not be introduced; compliance with local hunting legislation.			
P2. Development, implementation and monitoring of plans to reduce GHG emissions; minimum savings rate in GHG emissions over the complete supply chain.		The greenhouse gas balance is based on EU methodological framework [167].	
P3. Application of field cultivation techniques to reduce the possibility of soil erosion; restriction on burning as part of the cultivation process; soil organic matter is maintained/preserved; application of techniques that improve or maintain soil structure avoid soil compaction.			
P4. Water: a) Storage of mineral oils and fuels in an appropriate manner, which reduces the risk of contamination of water courses; b) respect for formal and customary water use rights; c) irrigation practices do not impair the water availability for the population; d) the water used comes from sustainable sources, e) water abstraction only with the permission of local water authorities; f) minimization of application of fertilizers with a considerable nitrogen content g) No application of fertilizers with a considerable nitrogen content on absorptive soils; application of all fertilizers must be documented.	d) e.g. that supply enough water under normal (average) conditions; f) in order to prevent contamination of surface water		
P5. Plant Protection Products: a) Workers handling and/or administering plant protection products are appropriately qualified and dispose of certificates proving their competence; b) all the plant protection products applied are officially registered or permitted by the appropriate governmental organization in the country of application; c) appropriate handling of agrochemicals; maintenance of application equipment; d) plant protection products (PPP) are only used on agricultural land and not in or next to water bodies; compliance with local restrictions to the use of PPP; e) PPP must not be harmful to bees or they are not used during flowering of the crop; f) recording of all PPP applications; g) compliance with local PPP storage regulations; h) Secure storage of PPP.	b) where no official registration scheme exists, FAO International Code of Conduct on the Distribution and Use of Pesticides applies;		FAO International Code of Conduct on the Distribution and Use of Pesticides
P6. Social security: a) The farm management and the employee's representative have signed and displayed a self-declaration assuring good social practice and human rights of all employees; b) no discrimination of race, color, sex, religion, political opinion, nationality, social origin or other distinguishing characteristic;	Records demonstrate clearly an accurate overview of all employees (including seasonal workers and subcontractors) working on the farm. Records contain wage and the period of employment and must be accessible for the last 24 months;	b) ILO conventions 100 and 111 c) as meant in ILO Convention 29 and 105 d) ILO Convention 138	

c) prohibition of forced, bonded or involuntary labour; d) prohibition of child labour e) all children living on the farm have access to primary school education; freedom of association and freedom of collective bargaining; f) the responsible person and the elected person of trust demonstrate awareness and/or access to national regulations concerning: Gross and minimum wages, working hours, union membership, anti-discrimination, child labour, labour contracts, holiday and maternity leave, medical care and pension/gratuity; g) documentation of a clearly identified, named person of trust and/or a workers' council representing the interests of the staff to the management; h) a complaint form and/or procedure is available for farm employees and surrounding communities;	Establishment of a time recording system that makes working hours and overtime transparent for employees and employer; Documented working hours, breaks and rest days are in line with legal regulations and/or collective bargaining agreements and working hours do not exceed 48 hours a week.	and 182 e) in accordance with all national and local legislation and ILO Conventions 87 and 98	
P7. Documents show legal ownership or lease, history of land tenure and the actual legal use of the land; fair and transparent contract farming.			
P8. The biomass production does not replace stable crops and does not impair the local food security.			
P9. The producer or producer group takes responsibility to undertake a minimum of one self-assessment or producer group internal inspection, respectively, per year against the ISCC Checklist; effective corrective actions are taken as a result of non-conformances detected during the self-assessment or internal producer group inspections;	One self-assessment or internal inspection of ISCC checklist per year. Establishment of a record system for each unit of production; Records kept in an ordered and up-to-date fashion.		
P10. The ISCC registered product must be traceable back to and traceable from the registered farm and field (and other relevant registered areas) where it has been grown.	ISCC product can be traced back to farm and field.		

GSL: Grüner Strom Label (biomass for electricity)

General characteristics:	
Status:	In implementation
Geographical coverage:	Germany
Scope:	Green electricity
Initiator system:	1999, BUND, Bund der Energieverbraucher, Deutscher Naturschutzring DNR, Die Verbraucher Initiative, EUROSOLAR, IPPNW, NABU and the Naturwissenschaftler-Initiative. The 'Zentrum für Sonnenenergie- und Wasserstofforschung ZSW is providing the certification body.

Short summary system or initiative:	Extension system:	
The Grüner Strom Label is a German eco-label, developed by Grüner Strom Label e.V. It comprises two different labels: GSL Gold and GSL Silver. The label guarantees that green power offered to German consumers adds additional value for the environment, and is derived from 100% renewable sources.	Principles included:	Y
	Criteria included:	N
	Indicators included:	N
Context:		
-		
Status of system:		
In implementation		
Planned activities:		
-		

Structure system or initiative:	
Juridical basis:	Voluntary
Participation:	Members of the organization are associations which serve the purpose of environmental protection, advance of renewable energy and efficient and preservative use of energy. Broad stakeholder involvement and publication of certification and standard setting processes [12]. The members developed the criteria. A certification committee decides on their modification [170].
Local stakeholder involvement	Broad stakeholder consultation in verification process [12].
Monitoring performance:	
Chain of custody system	Power directly from the producer to the consume
Level of detail CoC system:	Verification: annual accounting. Certificated suppliers are authorized to issue the label to their customers limited to one year if they use Green Power. The Centre of solar energy and hydrogen research is authorized with the implementation of the certification process [170].

Further information on:	
Removal of trade barriers	
Costs:	

The principles and criteria of the Grüner Strom Label are not available in English.
The German version of the standard is downloadable from:
http://www.gruenerstromlabel.org/images/stories/091125_kriterienkatalog_2008.pdf

List of principles included [12]:	
1	The provided power should exists exclusively from renewable energies or combined heat and power

OK Power (biomass for electricity)

General characteristics:	
Status:	In implementation
Geographical coverage:	Germany
Scope:	Green electricity
Initiator system:	2000, Öko-Institut, Verbraucher-Zentrale Nordrhein-Westfalen, World Wide Fund For Nature (WWF) Deutschland [12]

Short summary system or initiative:	Extension system:	
OK Power is a German eco-label, developed by the German Institute for Applied Ecology and WWF Germany. The label guarantees that strict ecological and environmental criteria have been met. The age criteria applied stipulate that a minimum of one third of the volume of generated power comes from power plants less than 6 years old, and a maximum of one third of the volume comes from plants more than 12 years old.	Principles included:	Y
	Criteria included:	Y
	Indicators included:	
Context:		
Status of system:		
In implementation. The 'ok-Power' label exists since 2000. 8 suppliers were labelled so far. The label guarantees the expansion of renewable power plants beyond the regulations of Renewable Energy Law.		
Planned activities:		

Structure system or initiative:	
Juridical basis:	Voluntary
Participation:	Broad stakeholder participation in standard setting
Local stakeholder involvement	
Monitoring performance:	The compliance of the criteria is checked every year by independent accredited laboratories [170].
Chain of custody system	Directly from the provider to the consumer
Level of detail CoC system:	No accreditation of verification bodies. Proof of professional competence and independence is required [12].

Further information on:	
Removal of trade barriers	
Costs:	

The principles and criteria of the Grüner Strom Label are not available in English.
The German version of the standard is downloadable from:
http://www.energie-vision.de/downloads/ok-power-Kriterien-6_6_KF.pdf

List of principles included [12].	
1	The power consists of 100% renewable energy sources.
2	SO2 and NOx standard values for combined heat and power.

Green-E (biomass for electricity)

General characteristics:	
Status:	In implementation
Geographical coverage:	USA
Scope:	Renewable energy. The following types of renewable energy are eligible to supply Green-e Energy Certified products [171]: 1) Solar Electric; 2) Wind; 3) Geothermal; 4) Hydropower, 5) Solid, liquid, and gaseous forms of Biomass.
Initiator system:	

Short summary system or initiative:	Extension system:	
Green-e is the USA independent certification and verification program for renewable energy and greenhouse gas emission reductions in the retail market [171].	Principles included:	Y
	Criteria included:	Y
	Indicators included:	
Context:		
-		
Status of system:		
In implementation		
Planned activities:		
-		

Structure system or initiative:	
Juridical basis:	Voluntary, label
Participation:	Green-e Energy and Green-e Climate are governed by an independent board called "The Green-e Governance Board" (Board). The Center for Resource Solutions serves as the program administrator. The advisory stakeholder group is comprised of representatives from environmental organizations, power marketers, renewable developers, greenhouse gas reduction developers and marketers, energy and climate policy experts and other interested parties. Stakeholders can make recommendations to the Green-e Governance Board for modifications to the certification standards to ensure that they remain consistent with changing circumstances and evolve with market conditions and to ensure the Program is practical and consistent with broader public policies [172].
Local stakeholder involvement	
Monitoring performance:	Annual verification process audit is required
Chain of custody system	
Level of detail CoC system:	Third-party verification that an MSW facility has met these criteria is required in order for the electricity or REC's from a facility to be used in a Green-e Certified product [172]. The Green-e Energy verification process consists of two main elements: •An annual Verification Process Audit of renewable energy sales and supply •Twice-annual Marketing Compliance Reviews of marketing materials

Further information on:	
Removal of trade barriers	
Costs:	

Standard: http://www.green-e.org/docs/energy/Appendix%20D_Green-e%20Energy%20National%20Standard.pdf

* Note: More principles are listed but not all are shown here. Only the ones relevant for sustainable biomass and bioenergy production

List of principles included [171]:	
1	Sources of biomass
2	Co-firing of Biomass with Non-Renewables
3	Emissions Limits on Biomass
4	Emissions Criteria for the Non-Renewable Portion of a Green-e Energy Product
5	New renewables
6	Energy storage

Criteria [171]	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
1. Sources biomass: Solid, liquid, and gaseous forms of Biomass from the following fuels: a) All woody waste; b) All agricultural crops or waste; c) All animal and other organic waste; *d)* All energy crops; *e)* Landfill gas and wastewater methane; *f)* Municipal Solid Waste is eligible if it is first converted to a clean burning fuel that is then used to generate electricity. The solid waste conversion facility for converting the municipal solid waste to a clean burning fuel must meet a set of criteria. *Not listed here.* g) Biomass resources excluded from eligibility include: a) Wood that has been coated with paints, plastics, or Formica; and b) Wood that has been treated for preservation with materials containing halogens, chlorine or halide compounds like CCA-treated materials, or arsenic. (CCA = chromate copper arsenate) h) Qualified wood fuels may contain de minimis quantities (less than 1% of total wood fuel) of the above excluded contaminates. i) Biodiesel (B100) that is used to generate electricity is eligible for Green-e Energy. Biodiesel blended with petroleum diesel is permitted if all of the following conditions are met: a) The biodiesel is separately measured (and verified) from the petroleum diesel; and b) Contracts are in place to allow CRS to verify that the biodiesel was converted to electricity. Only the amount of electricity generated from the biodiesel may be counted as part of a Green-e certified product.			
2. Co-firing of eligible forms of biomass with non-renewables is permitted if at least one of the following conditions is met: • The facility is located in an electric system control area that makes use of a generation tracking system (e.g., NEGIS, PJM-GATS, WREGIS) that is fully capable of accurately measuring and reporting the differentiated (biomass-fired and non-biomass-fired) electrical output from the facility; or, • The biomass is in a gaseous or liquid state, is separately metered and there are contracts in place to verify that the biomass portion was converted to electricity; or • Facilities that do not meet either of the criteria above may be eligible subject to a case-by-case review by the Green-e Governance Board. The methodology presented to Green-e Energy must demonstrate that the Btu value of the electrical output from the facility is attributed to the eligible biomass fuel. Some of the criteria that the Board will consider in making a decision are e.g. whether the facility was modified to accept biomass fuel *(Other decision criteria are listed as well, not shown here).*			
3. Emission limits: All facilities must be in compliance with all state and/or federal laws/rules regarding emissions. For facilities subject to New Source Review (NSR), the facility must be compliant with all applicable regional and state standards pertaining to NSR.			
4. Some renewable electricity products do not meet 100% of a customer's electricity load and/or will contain non-renewable energy. The emission rates per kWh for SO2, NOx, and CO2 from the non-renewable portion of the eligible product may not exceed customer's average utility, state or regional power emissions rates.			
5. Only new renewables are eligible to meet Green-e Energy standards. The term "new" is defined to include any eligible renewable facility beginning operation or repowered after January 1, 1997. An eligible new renewable generation facility must meet at least one of the following conditions: 1) Placed in operation (generating electricity) on or after January 1, 1997; 2) Repowered on or after January 1, 1997 such that at 80% of the fair market value of the project derives from new generation equipment installed as part of the repowering. *Other conditions are mentioned; not shown here.*			
6. Energy storage systems or plants, including pumped hydroelectric storage, battery storage, etc. are not energy resources. While each of these storage technologies may play an important future role in managing the delivery of non-dispatch able renewable energy, they are not in themselves a renewable energy resource. Therefore, these storage technologies themselves are not qualifying sources of renewable generation.			

Switzerland: Naturemade Label (biomass for electricity)

General characteristics:	
Status:	In implementation
Geographical coverage:	Switzerland
Scope:	Green Electricity (solar, wind, biomass) >>> The Certification Guidelines of the Association for Environmentally Sound Energy (VUE) apply to the following: a) plants and power stations which generate energy from renewable energy sources, designate and certify their energy under the naturemade star or naturemade basic quality label and market it as such; b) Energy distributors and suppliers which designate or certify electricity products under the naturemade star or naturemade basic quality label and market them accordingly to their end-customers [173].
Initiator system:	The naturemade quality mark is sponsored by the Association for environmentally sound energy (VUE), founded in 1999 [173].

Short summary system or initiative:	Extension system:	
Naturemade is the quality mark for ecologically produced energy (naturemade star) and energy from renewable sources (naturemade basic). The mark is awarded after thorough inspection by the Association for environmentally sound energy [173].	Principles included:	Y
	Criteria included:	Y
	Indicators included:	-
Context:		
Status of system:		
In implementation		
Planned activities:		
-		

Structure system or initiative:	
Juridical basis:	
Participation:	
Local stakeholder involvement	
Monitoring performance:	In principle the monitoring audit is due annually. In the first year of validity of the naturemade quality label, the maturity of the monitoring audit may be extended to a maximum of 15 months. It may also be reduced to less than 12 months. This flexible timing makes it possible to adjust the interval as desired (e.g. to carry out the monitoring audit at the end of the hydrological year) [173].
Chain of custody system	
Level of detail CoC system:	On an annual basis, third party auditing institutions performs a series of audits in order to verify that the producer and supplier keep fulfilling the environmental requirements for the green power supplied. In case the supplier does not meet the given requirements, the label can be withdrawn and naturemade can make this public. The energy producer or supplier has a free choice of auditor. VUE provides a list of its accredited auditors. The monitoring audit must be conducted by an accredited auditing institution. The certification audit concludes in the certification audit report, explaining how the certification criteria are met [173].

Further information on:	
Removal of trade barriers	
Costs:	To minimize costs, several plants can be certified in a package (e.g. various photovoltaic plants of a local supplier). This means, different separate plants can be certified in one audit. There is only one licensee

	and only one licence number. The licence fee and certification fee have to be payed in common for all plants [173].

Certification criteria are developed for [173]:

- Certification of energy generation to the naturemade star quality standard
- Electricity generation from water power plants
- Electricity generation from drinking water power plants
- Electricity generation from photovoltaic plants
- Electricity generation from wind turbines
- Electricity generation from green waste composting plants
- Electricity generation from wood fuels and waste timber
- Thermal energy generation from wood fuels and waste timber BTTP.
- Thermal energy generation from wood fuels and waste timber combustion > 70kW
- Electricity generation from wood fuels and waste timber with gas cogeneration with fixed bed gasifier
- Thermal energy generation from wood fuels and waste timber with gas cogeneration with fixed bed gasifier
- Electricity generation from agricultural biogas
- Electricity generation from sewage gas
- Certification of electricity supply to the naturemade star and naturemade basic quality standards

Shown here: certification criteria of electricity supply:

List of principles included [173]:	
1	Origin of electricity
2	Nature made star mixed electricity products
3	Nature made Basic mixed electricity products
4	Integration of the part of electricity refunded by the cost-covering feed-in tariff
5	Sponsorship and improvement
6	Legal compliance
7	Energy management
8	Availability and synchronization
9	Demand excess
10	Termination
11	Supply guarantee
12	Product information
13	Certification documents
14	Implementation of support model
15	Compliance with communication principles

Criteria [173]	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
1. The origin of the electricity product for certification is traceable back to the sources (own plants or third-party suppliers). Sources must be clearly indicated in the form "declaration for energy products". In the case of third-party suppliers, the proof must have the form of an energy supply contract. If no physical delivery takes place, or if only the "ecological added value" of the electricity is obtained, proof must be provided through an appropriate quality management system (e.g. a certificate trading system). It must be proved that there is no double sale of 'ecological added value.'			
2. A mixed electricity product for which the supplier applies for certification with the naturemade star quality label may only consist of naturemade star-certified hydro-electricity or electricity from new renewable sources.			
3. A mixed electricity product for which the supplier applies for certification with the naturemade basic quality label may only consist of naturemade star-certified or naturemade basic-certified electricity. As soon as a mixed electricity product contains a part of non-certified electricity (e.g. 0.1%), it may no more be designated as a naturemade basic-certified product.			
4. In exceptional cases, regarding the legal compliance, it is allowed to include the part of the electricity refunded by the cost-covering feed-in tariff into a naturemade-certified product. This is especially affecting suppliers which have a portfolio only including specified products. The integration into a certified product has to be approved by the Board of the VUE.			
5. Promotion of renewable energy sources and energy efficiency must be essential parts of the licensees' corporate policy.			
6. All technical, legal and other conditions necessary to supply electricity must be met.			
7. The producer uses an appropriate energy management system to assure its procedures and to guarantee suitable measurement and monitoring activities.			
8. The end-customer only pays for the supplied electricity when the corresponding capacity is available. With an annual accounting period, the electricity supplier must achieve a balance of certified energy procured and sold. Annual synchronization of procurement and consumption (sales) applies, as constant synchronization would be very demanding in terms of control mechanisms and control.			
9. The certified electricity sold each year must not exceed the certified electricity procured in the same year. Exceptionally, VUE will accept a demand excess not exceeding 15%. This can either be compensated from unsold certified electricity from the previous year, or eliminated in the following year. Exceptionally, VUE will accept a transfer of a supply surplus of purchased but not sold electricity into the following year. This transfer may not exceed 15% of the sold electricity. Certification Guidelines version 1.8 01.01.10, 27 from 30 Certification Guidelines version 1.8 01.01.10, 28 from 30			
10. Withdrawal from an electricity supply contract must be contractually governed, without risk to the customer.			
11. The energy supplier must guarantee that the contracts for the procurement of energy from renewable energy (i.e. the maximum period of validity of the licence) exceeds the terms of the energy supply contracts concluded.			
12. The energy supplier must provide the end-customer with consistent product information supplementing the sole certificate. This information must contain certain data prescribed by VUE and be issued to the customer on sale of the certified energy. These product information must cover at least the following aspects: − percentage composition of energy sources used; − origin of energy sources used; − location of energy generating plant(s) and/or production premises for renewable energy − the logo of naturemade of the according quality in an appropriate form and possibly the following, voluntary information: − certificate number and − overall environmental impact as per Eco-Indicator 99.			

13. For a certification by VUE, the energy supplier must submit to VUE the following documents: # certification application: this contains the main information about the enterprise and the future licensee # declaration for energy products: this contains all important information about the energy product, including name and declaration of origin # Certification audit report: This confirms compliance with all relevant naturemade certification criteria.			
14. All sellers of naturemade-certified energy to end-customers must implement the naturemade support model. Proof of implementation of the naturemade support model is provided annually by the following documents: # energy accounting: a compilation of all figures on energy procurement and sales relevant to the naturemade support model and # a marketing plan or similar management tool detailing specific marketing efforts for the naturemade-certified energy products, with timetable for implementation.			
15. All sellers of naturemade-certified energy products must follow the communication and configuration guidelines defined by VUE, as issued with the certificate.			

SEKAB (biomass for biofuels)

General characteristics:	
Status:	In implementation
Geographical coverage:	Biomass resource from Brazil (Sao Paulo State). Destination country in Sweden [174]
Scope:	Ethanol from Brazilian sugarcane
Initiator system:	Swedish company SEKAB

Short summary system or initiative:	Extension system:	
SEKAB has developed, together with progressive Brazilian ethanol producers, criteria for sustainable ethanol. SEKAB delivers about 90% of all ethanol in Sweden for E85 and ED95 [174].	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Y (not always clear)
Context:		
Developed to guarantee the sustainability of ethanol to consumers and other stakeholders.		
Status of system:		
In implementation (to be considered as an initial step on which to build). So far, 7 mills are involved in the project [175].		
Planned activities:		
Further criteria can be added later, the scope can be broadened and the requirements of the criteria can be increased – all if needed. Development of criteria for year 2 [176]: • Broaden the scope on social issues • Specific focus on Health & safety issues • More focus on environmental issues • Further evolve criteria for year 1 (e.g. in first audit round: different calculation methods used for fuel input)		

Structure system or initiative:	
Juridical basis:	Voluntary. Principles are requirement from SEKAB to its providers.
Participation:	Criteria are developed together with the trade associations BioAlcohol Fuel Foundation (BAFF), which represents the ethanol market in Sweden, and UNICA, which represents the sugar-cane industry in Brazil [174].
Local stakeholder involvement	Not explicitly mentioned in criteria
Monitoring performance:	
Chain of custody system	Full traceability of all physical flows.
Level of detail CoC system:	Monitoring and verification of criteria is implemented by independent 3rd party (SGS). In case of non-compliance, following procedures are in place [174]: • Observation: shall be corrected before next audit; • Minor non-compliance: corrected within 3 months; • Major non-compliance: a plan for mitigation shall be submitted within 14 days – always followed by an extra audit. Audits included a visit to the plantation and mills. The audit has a basis for 6 months. <u>Accreditation:</u> Audits being performed by qualified integrated auditor (according to 17011). Lead Auditors Team qualified for Social and Environmental Schemes (FSC, PEFC, SA 8000, Code of Conducts, ISO 14000, OHSAS18001, ISO 9001, Globalgap, and GHG Verification Schemes) [175]. <u>Verification:</u> Audit Methodology includes: • Assessment of the data to input the calculation sheets. • Data considered for own land and rented land. • Records checked for all fertilizer and pesticides consume (by purchasing records, application records and storage records); • Feedstock transport and receipt (by records, maps); • Sucrose contents by lab tests performed during the crop; • Agricultural area (by maps);

	• Diesel consumption (machines and transport); • Conversion data records for the crop (ethanol/cane). • Distances calculation from farms to mill to harbour.

Further information on:	
Removal of trade barriers	-
Costs:	-

List of principles included [174]:	
1	At least 85% reduction in fossil carbon dioxide compared with petrol, from a well to wheel perspective
2	At least 30% mechanization of the harvest now, plus a planned increase in the decree of mechanization to 100%
3	Zero tolerance for felling of rain forest
4	Zero tolerance for child labor
5	Right and safety measures for all employees in accordance with UN Guidelines.
6	Ecological consideration in accordance with UNICA's environmental initiative (Green Protocol)
7	Continuous monitoring that the criteria are being met

Note at principle 2:
Benefits of mechanized harvesting:
– Lower local particle emissions
– Better work environment
– Improved reduction of CO2
Disadvantages: Risk of unemployment

Notifications:
Brazil has ratified Ramsar wetland convention and the CBD.

List of criteria and indicators [174]:

Criteria	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
1a. Calculation is based on a field-to-wheel perspective including: - Cultivation, production, transportation - Total CO2 emissions from Brazil to Sweden	85% GHG reduction compared to petrol	Methodology based on RTFO principles <u>Audit methodology [175]:</u> - Assessment of data to input calculation sheets. - Data considered for own land and rented land. - Records checked for all fertilizer and pesticides consume (by purchasing records, application records and storage records); - Feedstock transport and receipt (by records, maps); - Sucrose contents by lab tests performed during the crop; - Agricultural area (by maps); - Diesel consumption (machines and transport); - Conversion data records for crop (ethanol/cane). - Distance calculation from farms to mill to harbour.	
1b. Calculations are according to RTFO principles			
1c. Fossil input to be included: fertilizers, pesticides, fossil energy			
1d. Renewable output: ethanol, energy (steam, electricity)			
2a. 30 % mechanized harvest first year	30% mechanized harvest area	<u>Auditor check: [175]:</u> - Check Burning Plan approved by Environmental Agency for the year as well as the permission for each burned area. - Check records for penalties for illegal burning; - Site visit to confirm the burned area. - Records of receipt in the mill of burned cane and non-burned cane (normally different lines).	
2b. Implementation plan for 100% mechanization	Implementation plan available for 100% mechanized harvesting area		
3a. No deforestation of rainforest is permitted		<u>Auditor check: [175]:</u> - Assessment of Land property documents (contracts and maps) including leasing contracts; - Conversion is not allowed after November 2005; - Satellite image checking for current and previous (2005 situation); - Check agricultural expansion area data (if done); - Verification of site maps; - Permission to deforest and/or cutting isolated trees.	
3b. Deforestation of other forests according to national laws – Permits required – Brazilian law: cut down 1 tree, replant 25 new			
3c. To preserve biodiversity			
3d. Land use change			
4a. Child labor below 16 years of age - Defined according to Brazilian law	Brazilian law establishes as minimum age to work 16 years (exception made for apprenticeship); Union Agreements and Federal Healthy and Safety law do not permit under 18 years old both on plantation and the mill;	<u>Auditor check: [175]:</u> Checked by interviews, on-site observation and records (labour contracts, inspection books from Labour Ministry, Collective Bargaining Agreements.)	
4b. Apprentice from 14 years of age			
4c. In compliance with article 1 and 2 in ILO convention 138			
5a. Zero tolerance to forced labor (”slave labor”)		<u>Auditor check: [175]:</u> Done by interview with workers, observation on the	
5b. Workers right to organize in unions etc			

5c. All employees must be registered		workplace, assessment of mill, farms and housing facilities and by checking the records of labor documents such as: - Labor contracts and records; - Payments and time calculation, including productivity; - Medical records and PPE delivery records; - Licenses - Inspection books; - Accident records and communication with authorities; - Union Agreements; - Healthy and safety documents (mandatory)	
5d. Employees must be paid at least minimum wages			
5e. Health & safety policies shall be in place and followed			
6a. Protection of forests close to water areas		Auditor check: [175]: Existence and validity of the certificate; Existence of a action plan to address the following requirements: - Targets for elimination of sugarcane burning; - Protection of riparian forest; - Protect and restore the vegetation around water springs; - Implementation of technical plan for soil conservation; - Technical plan for water resources conservation; - Good practices for pesticides handling and disposal; - Good practices to minimize air pollution.	
6b. Protection of water resources			
6c. Program for reuse of water in industrial processes and for conservation of water quality	Program for water reuse industrial processes and water conservation available		
6d. Implementation plan for soil conservation	Implementation plan soil conservation available		
6e. Plan for reduction of environmental impacts from production	Reduction plan environmental impacts available		
7a. Monitoring and verification of the criteria's shall be done through audits by an independent third party			
7b. In case of Non compliance, follow procedures (see CoC description)			
7c. Full traceability of all physical flows			

Greenergy (biomass for biofuels)

General characteristics:	
Status:	In implementation
Geographical coverage:	Biomass resource (supply) from Brazil, to be used for end-user Greenergy (in UK)
Scope:	Bioethanol supply from Brazil including sugarcane production and processing (to be used for bioethanol)
Initiator system:	Greenergy (oil company in UK)

Short summary system or initiative:	Extension system:	
The Greenergy interpretation for Brazilian sugarcane is an adaptation of the RTFO sustainable meta-standard for biofuels, specifically for the Brazilian ethanol context. It is not a substitute for an international standard [177].	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Y
Context:		
As the RTFO structure was developed it became clear that there would be no benchmarked sustainable production standard for sugarcane by the time the obligation was introduced in April 2008. As the Better Sugarcane initiative was still at a relatively early stage of development, Greenergy believed that it could best contribute to the development process by demonstrating in practice what could be achieved [177].		
Status of system:		
The process of interpreting the meta-standard was led by ProForest. As part of the development process, two field tests were undertaken, one as part of the initial drafting stage and one subsequent to the technical meeting. The interpretation was also peer-reviewed by WWF Brazil and UTZ certified. Until such time as a credible robust international standard exists Greenergy will continue to audit its supplies to the current standard [177]. A technical paper [178] is developed as a first step on how to approach Indirect Land Use Change emissions: *See technical report.*		
Planned activities:		
Greenergy will actively support the development of the Better Sugarcane Initiative Standard and its third Party certification. Until such time as a credible robust international standard exists Greenergy will continue to audit its supplies to our current standard.		

Structure system or initiative:	
Juridical basis:	Participation in label is requirement by Greenergy to its providers to be able to meet RTFO standard.
Participation:	It is recognized that neither this interpretation nor the RTFO Meta-Standard have been developed with sufficient stakeholder involvement to be a substitute for the process required in the development of an international standard [177].
Local stakeholder involvement	Requirement of stakeholder consultation is included in principle 7
Monitoring performance:	-
Chain of custody system	Not applicable: system focuses on biomass production only
Level of detail CoC system:	The audits themselves have been conducted by Imaflora, the Rainforest Alliance's Sustainable Agriculture Network auditors in Brazil. It is expected to complete the first round of audits by April 2009. The scope of the audit includes a visit to the offices and infrastructure of the mills and sugarcane fields + control of required documentation and records [179].

Further information on:	
Removal of trade barriers	-
Costs:	-

List of principles included [180]:	
1	Principle 1: Carbon Conservation
2	Principle 2: Biodiversity Conservation

3	Principle 3: Soil Conservation
4	Principle 4: Sustainable Water Use
5	Principle 5: Air Quality
6	Principle 6: Workers Rights and Working Relationships
7	Principle 7: Land Rights and Community Relations

List of criteria and indicators [180]:

Criteria	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
1a. Preservation of above and below ground carbon stocks relative to stocks on 30 November 2005.	Evidence that biomass production has not caused direct land use change with a carbon payback time exceeding 10 years.	* Any calculations must be undertaken using the RFA default values or following the RFA methodologies for using actual data. Verification: * Documentation of environmental assessments of expansions since 2005, showing no conversion of natural ecosystems (forests or Cerrado) since 2005; * Verification that the scope of the environmental licenses (issued since 2005) does not include conversion. Where there has been any conversion of natural ecosystems, evidence that the carbon payback does not exceed 10 years.	
	Evidence that the biomass production unit has not been established on soils with large risk of significant soil stored carbon losses as peat lands, mangroves, wetlands and certain grasslands	Verifier: see above	All protected under the Forest Law no 4.771 – 15 September 1965
2a. Compliance with national laws and regulations relevant to biomass production and in the area where biomass production takes place.	No evidence of noncompliance with applicable national and local laws, decrees and regulations including: · Land ownership and land use rights · Forest and plantation management · Protected and gazetted areas · Nature and wild life conservation · Land use planning · National laws resulting from the adoption of CBD and CITES	Means of verification: * Documentation showing that the location and extent of permanent preservation areas and legal reserves has been legalized (or a plan is in place for the process of legalization within a set timescale). * Maps showing the legal reserves (including slopes and riparian areas). * Figures indicating the legal reserve area (or planned area) will meet the State's percentage requirements. * Confirmation of the existence of permanent preservation areas and legal reserves in the field. * Other licenses, legal documents, certificates provided by relevant legal bodies stating that there are no outstanding debts or infractions or interviews with workers and other stakeholders with regards to legal compliance.	* Forest Code (Law No 4.771, 15 September 1965) * The National Biodiversity Policy was elaborated in Decree No. 4339, 22 August 2002, which is aligned with the articles and objectives of the Convention on Biological Diversity. * The Convention on International Trade in Endangered Species (CITES) requirements were legislated through the Presidential Decree 3607/2000.
	Evidence that the organization is: · familiar with relevant national and local legislation · is seeking to comply with the legislation · remains informed of changes in legislation	Means of verification: * Documented information on applicable legal requirements (this is expected of large-scale producers). * Knowledge of the main legal requirements * Procedures and practices relating to legal compliance implemented in the field. * System in place to incorporate changes to the legislation (this may include membership to an organization that provides such updates or an environmental manager with this responsibility).	
2b. No conversion of high biodiversity areas after November 30, 2005.	Evidence that production does not take place in gazetted areas or Conservation Units.	Means of verification: * Maps showing conservation units, in context with production areas. * Documented permission for use in conservation units, where applicable.	IBGE, the Brazilian Institute for Geography and Statistics, maintains a database of parks and reserves
	Evidence that production does not take place in areas with one or more HCV areas: HCV 1, 2, 3 relating to important ecosystems and species; HCV 4, relating to important ecosystem services, especially in vulnerable areas; HCV 5, 6, relating to community livelihoods and cultural values.	Means of verification: * Valid environmental license issued by Environment Agency. * Documented evidence of an impact assessment for any expansion that has taken place since 30 November 2005. * Documentation identifying where HCV occur and the area required to maintain them, including areas owned but not under production. * Consultation with stakeholders (particularly CONAMA).	National survey on Sustainable Use of the Brazilian Biological Diversity Project: identified important areas for biodiversity conservation. Ecological Economical Zonings (EEZ) is undertaken at the State level. The Environmental Agency CONAMA has defined sustainable use for natural resources, for application at a municipal level.

			Environmental licensing is required for expansion, and includes an impact assessment by the Environment Agency.
	Evidence that production does not take place in any areas of high biodiversity.	See above	The RTFO guidance refers to UNESCO World heritage sites; IUCN List of Protected Areas categories I, II, III and IV, according to the list from 2003 or more up to date national data; RAMSAR sites
2c. The status of rare, threatened or endangered species and high conservation value habitats, if any, that exist in the production site or that could be affected by it, shall be identified and their conservation taken into account in management plans and operations.	Documentation of the status of rare, threatened or endangered species and high conservation value habitats in and around the production site.	Means of verification: * Existence of up to date flora and fauna surveys, appropriate to the scale of production. * Familiarity with IBAMA list of RTE species. * Lists or maps identifying RTE species and high conservation value habitats in and around the production site (for small scale production, knowledge of these may be sufficient).	The Ministry of the Environment, IBAMA, and the Fundago Biodiversitas, maintain the Brazilian Official List of Species Threatened with Extinction.
	Documented and implemented management plan including measures to avoid damage to or disturbance of the above mentioned species and habitats.	Means of verification: * Existence of documented plans or actions appropriate to species and habitats identified in 2.3.1, and confirmation of field implementation. * For large companies (>1000 workers), an individual or team with designated responsibility for technical management of species + habitats. * Interviews with workers that handle activities with high potential impact, to verify instructions they follow to carry out such activities.	
3a. Compliance with national laws and regulations relevant to soil degradation and soil management.	No evidence of noncompliance with national and local laws and regulations with respect to: * Environmental Impact Assessment, * Waste storage and handling, * Pesticides and agrochemicals, * Fertilizer and * Soil erosion	Means of verification: * Valid operational license is available for the area of production (this includes an environment impact assessment). * Agrochemicals are stored in a manner consistent with legal requirements. * Records of agrochemical use. Records (date, quantity/area and place) of the fertilizers and vinasse used. * Receipts showing destination of used agrochemical containers are available. * Signed receituário agrônomicos are available for all agricultural prescriptions.	Agro-toxic law at the federal level, law 7802, 11 June 1989. Agrochemicals covered by Decree No. 98.816 of 11 January 1990 List of banned agrochemicals, and compliance with Stockholm convention. SAN certification includes phasing out of red-label products as part of its program. Container destination is covered by Decree No. 3.550 of 27 July 1990. In the State of Sao Paulo, there is a law relating to soil conservation and preservation of agricultural soil (state law 6171 4 July 1988 updated by law 8421, 23 November 1993). The state of São Paulo has a law governing the field storage and application of vinasse (P4231 Jan 2005),
	Evidence that the organization is: · familiar with relevant national and local legislation · is seeking to comply with the legislation · remains informed of changes in legislation	Means of verification: * Documented information on applicable legal requirements (this is expected of large-scale producers). * Knowledge of the main legal requirements * Procedures and practices relating to legal compliance implemented in the field. * System in place to incorporate changes to the legislation (this may include for example membership to an organization that provides such updates or a person responsible within the company, e.g. the agronomist).	
3b. Application of good agricultural practices with respect to: · Prevention and control of erosion; Maintaining and improving soil	Documentation of soil management plan aimed at sustainable soil management, erosion prevention and erosion control.	Means of verification: * Existence of a documented plan or actions for soil management. * Records of regular soil analysis, including physical and	

nutrient balance; Maintaining and improving soil organic matter; Maintaining and improving soil pH; Maintaining and improving soil structure; Maintaining and improving soil biodiversity; Prevention of salinisation		chemical properties, e.g. N, P, and K. * Evidence that results of soil analysis have been incorporated into plans or actions. * Maps of soil types, where available and practical (this may include references to regional soil databases). * Field verification of erosion prevention activities and soil structure. * Field observation of incidences of erosion and salinisation.	
	Documented operating procedures for good agricultural practices must be implemented and monitored with respect to: · Prevention and control of erosion, · Maintaining soil fertility.	Means of verification: * Existence of documented operating procedures for soil. * Field verification of erosion prevention techniques and activities maintaining soil fertility, consistent with operating procedures.	There is a Classification System based on Soil Suitability for Use (as defined by the Brazilian Society of Soil Science) which agronomists can use. The state of São Paulo has a law governing the application of vinasse (P4231 Jan 200 5)
4a. Compliance with national laws and regulations relevant to contamination and depletion of water sources.	No evidence of noncompliance with relevant national and local laws and regulations including: · Environmental Impact Assessment · Waste storage and handling · Pesticides and agrochemicals · Fertilizer · Irrigation and water usage.	Means of verification: * Valid license(s) for water use or in process to get license. * Field verification that agrochemical application occurs as set out in the product labels (where available) as set out in Decree 98.816. * Field verification and documentation that the native vegetation along water courses (permanent preservation areas) are according to the Brazilian Forest Code (law 4.771).	National Policy for Water Resources (Law No.9433, 8 January, 1997 There is an agro-toxic law at the federal level, law 7802, 11 June 1989. Agrochemicals are also covered by Decree No. 98.816 of 11 January 1990 (NR31, legislation which relates to workers, also has requirements for washing of equipment and clothing. The state of São Paulo has a law governing the application of vinasse (P4231 Jan 200 5), which includes permanent preservation areas and watercourses.
	Evidence that the organization is: · familiar with relevant national and local legislation · is seeking to comply with the legislation · remains informed of changes in legislation	Means of verification: * Documented information on applicable legal requirements (this is expected of large-scale producers). * Knowledge of the main legal requirements * Procedures and practices relating to legal compliance implemented in the field. * System in place to incorporate changes to the legislation	
4b. Application of good agricultural practices to reduce water usage and to maintain and improve water quality.	Documentation of water management plan aimed at sustainable water use and prevention of water pollution.	Means of verification: * Existence of a documented plan or actions for water management (including irrigation and natural watercourses). * Existence of a documented plan or actions for agrochemical management (including risk analysis and contamination plans). * Records of regular water analysis. * Evidence that results of water analysis have been incorporated into plans or actions. * Field verification of sustainable water use and contamination prevention. * Field observation of incidences of poor irrigation control and vinasse leaching. * Interviews with adjacent communities and local stakeholders regarding well water or other sources under local use, and any contamination issues.	The Sao Paulo Environment Agency (CETESB) issues guidance and procedures for water management which are a useful example of good practice.
	Documented operating procedures for good agricultural practices must be implemented and monitored with respect to: · Efficient water usage, · Responsible use of agrochemicals, · Waste discharge	Means of verification: * Existence of documented operating procedures for water use and protection, including contamination procedures. * Maps of river basins, watercourses (including seasonal) and riparian vegetation. * Field verification of efficient water use techniques, responsible	

		use of agrochemicals and waste water, consistent with operating procedures. * Records of agrochemical and fertilizer purchased (quantities acquired, the purchase dates, purpose of use etc.). * Records of agrochemical, fertilizers and vinasse use (date, quantity and place)	
	Pests, diseases and weeds are effectively managed using appropriate Integrated Pest Management (IPM) techniques.	Means of verification: * Documented plan or actions minimizing chemical use through Integrated Pest Management Techniques. * Qualified agronomic professional employed for implementation of pest management. * Records of levels of chemical application (including commercial name and technical name). * Field observation of pests.	
	Justification for all chemical use must be documented, with no prophylactic use, and records of use maintained	Means of verification: * Documented agrochemical use plan or actions. * Records chemical use (fertilizers, pesticides, herbicides, etc.). * System for decision making for when use of chemicals or biological agents is appropriate (e.g. infestation threshold). * Lists or documentation of chemicals applied and their uses. * Interviews with agronomic staff regarding chemical use. * Evidence of justification for all agrochemical use.	
5a. Compliance with national laws and regulations relevant to air emissions and burning practices	No evidence of noncompliance with national and local laws and regulations with respect to: · Environmental Impact Assessment · Air emissions · Waste management · Burning practices	Means of verification: * Licenses to burn (applicable for the whole country). * A documented fire management plan, consistent with the State requirements (in the State of Sao Paulo and Minas Gerais only). Other States are discussing the implementation of a similar protocol. * Field verification of implementation of fire management plan. This may include an 'Etanol Verde'' certificate of compliance. * Where available, local records of air pollution. * Interviews with workers + stakeholders regarding air pollution.	Forest Code (Federal Law 4,771/65), regulated by the Decree 2661/98 (chapter 4, article 16) it is stated that the burning for harvest of sugarcane should be decreased by ¼ of the mechanizable area every 5 years, beginning in June 1998. In the State of Sao Paulo, areas with declivity less than 12%, burning for sugarcane harvest must be completely eliminated by 2021. In areas with declivity greater than 12%, burning must be completely eliminated by 2031 (law 11.241/02, Decree 49.446/05). There is also a voluntary agro-environmental Protocol. There is federal legislation relating to the allowable pollution concentrations in cities and urban areas.
	Evidence that the organization is: · familiar with relevant national and local legislation · is seeking to comply with the legislation · remains informed of changes in legislation	Means of verification: * Documented information on applicable legal requirements where they exist (this is expected of large-scale producers). * Knowledge of the main legal requirements * Procedures and practices relating to legal compliance implemented in the field. * System in place to incorporate changes to the legislation	
5b. No burning as part of land clearing or waste disposal.	Evidence that no burning occurs as part of land clearing or waste disposal.	Means of verification: * In cases of recent or planned expansion, evidence that burning will not be used: * Documentation (environmental licenses or other official documentation indicating scope of expansion). * Interviews with managers, workers and stakeholders regarding recent and planned expansion and land clearing.	There are laws about the disposal of waste by incineration
	For burning as part of sugarcane harvesting, a long term plan is in place to minimize burning.	Means of verification: * Documented long term burning management plan, incorporating mitigation of potential impacts (including on the	Though there is a law in Sao Paulo with a target to end burning, currently no other States have this in place. However, this

		workforce, in terms of job losses), and a future target to end burning as a widespread harvesting mechanism. * Technical justification is provided where there burning followed by mechanized harvest.	will need to be monitored as it is expected some states may bring in similar legislation in the future.
6a. Compliance with national law on working conditions and workers rights.	No evidence of noncompliance with applicable national and local laws and regulations	Means of verification: * Verification of contracts for workers. * Field verification and interviews with workers. * The Labour Ministry's list of companies with slavery offences. * List of workers registered in the "INSS" Social Security System. * "FGTS" (Fund for Job Period) tax documentations that show the numbers/quantity of registered workers and the amount of money that the company paid to this social tax.	The labour laws are consolidated under a piece of legislation called CLT. This includes NR31 and MP 410. There are also state-specific laws relating to contractors, employees and workers.
	Evidence that the organization is: · familiar with relevant national and local legislation · is seeking to comply with the legislation · remains informed of changes in legislation	Means of verification: * Documented information on applicable legal requirements (this is expected of large-scale producers). * Knowledge of the main legal requirements * Procedures and practices relating to legal compliance implemented in the field. * System in place to incorporate changes to the legislation	
6b. All workers have a legal contract.	Workers' contracts are consistent with all applicable requirements in Principle 6.	Means of verification: * Verification of existence of contracts for workers. * Interviews with employees and contractors.	
6c. All workers are adequately informed of their rights.	Evidence that the organization has effectively informed workers of all applicable rights as covered in Principle 6	Means of verification: * Workers are found to be aware of their rights in practice. * Records of communication. * Evidence that the method of communication is appropriate (e.g. comprehension by workers, discussion with unions, relevant stakeholders etc). * Existence of documents. * Confirmation from unions that workers are aware of their rights.	
6d. All workers have the right to organize and negotiate their working conditions	The right to organize should be consistent with that established in ILO Conventions 87 and 98.	Means of verification: * Evidence of union membership by employees. * Interviews with workers and unions.	ILO Convention 87 and 98.
	Workers exercising this right should be free from discrimination or other adverse consequences.	Means of verification: * Interviews with workers and unions.	
6e. No children may be employed except for family members working on family farms where this is consistent with their well-being.	No evidence of children under 16 working other than as apprentices or on family farms	Means of verification: * System in place to check the ages. * Field verification and interviews with workers. * For third party suppliers, a system in place to ensure this requirement is being met.	
	Evidence that children working on family farms are family members	Means of verification: * For third party suppliers, a system in place to ensure this requirement is being met. * Interviews with the family farmers and their children.	
	Evidence that if children are working on family farms the work does not interfere with their educational, moral, social or physical development and the work day inclusive of school and transport should not exceed 10 hours.	Means of verification: * Confirmation of hours spent at school. * Field verification that children are not harvesting, handling chemicals, heavy machinery, or working at night. * Distance to school and form of transport.	
6f. Young workers may only be employed if national law allows and shall only undertake appropriate work	No evidence that apprentices, aged 14-16, or young workers, aged 16 to 18 undertake hazardous or dangerous work.	Means of verification: * Field verification that young workers are not harvesting, handling chemicals, heavy machinery, or working at night. * Interviews with young workers. * Confirmation of hours spent at school.	
	No evidence that young workers undertake work which may jeopardize their educational, moral, social and physical	Means of verification: * Field verification and documentation of injuries and health	

	development.	problems associated with work. * Interviews related to educational issues. * Company documentation and procedures related to apprentices' educational programs.	
6g. There is adequate protection of the health and safety of all workers.	All workers receive regular and adequate health and safety training appropriate to the work that they perform	Means of verification: * Training materials and records. * Field verification (equipment use, harvesting technique etc.) for consistency with training. * Interviews with workers.	Federal Law 6,514/77 is the primary instrument governing occupational health and safety standards. The Ministry of Labour has issued NRs – *Normas Regulamentadoras.* Most of minimum requirements are set out in NR31, the legislation relating to workers and NR 7, *Programa de Controle Medico e Saude ocupacional* (107.0002) for occupational health and safety.
	Workers' basic requirements are met including potable drinking water, adequate toilet facilities, a clean place to eat, adequate protective equipment and access to adequate and accessible (physically and financially) medical care. Accommodation, where provided, shall be clean, safe and meet the basic needs of the workers.	Means of verification: * Field verification of field facilities and accommodation * Interviews with medical staff, workers	See above
	Hazards are identified and workers informed and adopt preventive measures to minimize risks. Records of accidents are maintained.	Means of verification: * Procedures are in place to prevent and minimize risks. * Records of accidents. * Interviews with workers related to emergency information and logistics in case of emergency.	NR 05 and Article 163 of the Consolidation of Labor Laws (CLT) requires that every company must create and operate an Internal Accident Prevention Commission (CIPA). NR 07 and 09, respectively, define requirements for the Workers Health and Medical Program (PCMSO) and the Environmental Risks Prevention Program (PPRA).
6h. All workers must be paid fair and regular wages.	Wages must be at least equivalent to the Brazilian national minimum wage or the industry standard, whichever is higher.	Means of verification: * Monthly payment slips/salary receipt * Interviews with human resources staff and workers. * Verification of the minimum rural salary with the regional rural employers´ union ("sindicato rural") for both the harvest period and the normal period. This should also be officially documented by the company.	
	Workers must be paid in cash, or in a form that is convenient to them and regularly.	Means of verification: * Interviews with workers. * Company Payment documents	
	Housing and other benefits are not automatically deducted from wages as an in-kind payment.	Means of verification: * Interviews with human resources and workers.	This is covered by National and State legislation. Federal Law 5,889/73 allows a deduction from the salary of up to 20% to cover accommodation and a deduction from the salary of up to 25% to cover meals (If previously authorized and agreed by the worker)
	Where workers operate on the basis of piecework, pay rates must allow wages consistent with I6.8.1 to be earned during normal working hours and allocated in transparent way.	Means of verification: * Documentation or electronic systems demonstrating how payment is allocated for piecework. * Monthly payment slips/salary receipt showing employees are receiving at least the minimum Brazilian wage (currently R$415.00). * Verification of the minimum rural salary with the regional rural employers´ union ("sindicato rural") for both the harvest period and the normal period. This should also be officially documented by the company.	

		Documents showing regular scale calibration (for supply contracts).	
6i. In accordance with ILO Conventions 100 and 111, there is no discrimination (distinction, exclusion, or preference) practiced that denies or impairs equality of opportunity, conditions, or treatment.	No evidence of discrimination based on individual characteristics and group membership or association like: Race, Caste, National Origin, Religion, Disability, Gender, Sexual Orientation, Union Membership, Political Affiliation, Age, marital status and those with HIV/AIDS, seasonal, migrant and temporary workers	Means of verification: * Documented company polices and procedures related to employment. * Interviews with workers. * Interviews with union, churches, family members, NGOs. Local FUNAI Office checks	ILO Convention 100 and 111
6j. There is no forced labour including bonded labour as defined by ILO conventions 29 and 105.	No evidence that any part of workers' salary, benefits, property, or documents are retained in order to force workers to remain on the farm.	Means of verification: * Records of visits by Labour Ministry * Interviews with workers. * Interviews with stakeholders churches, NGOs etc. * Verification of past Labour Ministry findings. * The Labour Ministry's list of companies with slavery offences	ILO conventions 29 and 105
	No evidence of any form of physical or psychological measure requiring workers to remain employed on the farm.	Means of verification: * Interviews with workers. * Verification of past Labour Ministry findings. * Records of visits by Labour Ministry	
	Spouses and children of contracted workers are not required to work on the farm.	Means of verification: * Interviews with human resources staff, workers. * Documented policies and procedures.	
7a. The right to use the land can be demonstrated and does not diminish the legal or customary rights of other users and respects important areas for local people.	Documents showing legal ownership or lease must be available.	Means of verification: * Documentation demonstrating legal ownership, e.g. official * Government registry of land ownership, agreement of sake between two parties. * Evidence of payment of taxes. * Documentation of lease agreements. Verbal contracts are not sufficient for leases. * Documentation of out-grower agreements. Where oral contracts exist, interviews with land owners	
	Identification of recognized legal and customary rights.	Means of verification: * Documented management plans or actions incorporating legal and customary rights, including local communities. * Maps showing extent of recognised legal and customary rights. * Stakeholder consultation with local communities, indigenous peoples and Quilombolas (where applicable). * Crosscheck existing applications for land claims with company documentation.	FUNAI, *Fundacao Nacional do Indio* National Foundation for Indians is the Brazilian official agency in charge of protecting indigenous interests and culture, and processes claims for land rights. The "*Brasil Quilombola*" Program (PBQ), which includes certification of communities and a program for filing land regularization and land title claims.
	Evidence of negotiated agreements and discussions with local people must be available.	Means of verification: * Documentation of meetings, communication and stakeholder consultation undertaken by the company. * Documented agreements, where applicable. * Interviews with stakeholders.	
Procedures are in place to consult and communicate with local populations and interest groups on plans and activities that may negatively affect the legal or customary rights, property, resources, or livelihoods of local peoples.	Policies and procedures for consultation and communication must be documented.	Means of verification: * Documented company policies and procedures relating to consultation and communication. * Procedures and policies include requirement that decisions have been made based on communication and consultation (or evidence of this in practice). * Documentation of audiences, and other types of community consultation * Large companies have a person responsible to deal with communities (>1000 workers), community (corporate) relations post.	

		Interviews with stakeholders.	
	Lists of local communities and other interest groups, records of consultation and communication, and records of actions taken as a result of input from interest groups, must be maintained, appropriate to scale.	Means of verification: See indicator	
	Potential impacts on legal or customary rights, property, resources, or livelihoods of local peoples are identified.	Means of verification: * Documented company policies and procedures relating to consultation and communication. * Procedures and policies include requirement that decisions have been made based on communication and consultation (or evidence of this in practice). * Documentation of audiences, and other types of community consultation *Large companies have a person responsible to deal with communities (>1000 workers), community (corporate) relations post. * Interviews with stakeholders.	
	Plans are in place to manage potential impacts on legal or customary rights, property, resources, or livelihoods of local peoples.	Means of verification: Same as indicator	

Swan Label (biofuels and biofuel pellets)

General characteristics:	
Status:	In implementation
Geographical coverage:	Destination: Nordic Countries
Scope:	Biofuels and biofuel pellets (in total 66 different product groups) [181]
Initiator system:	The Nordic Council of Ministers introduced the Swan in the year 1989. Norway and Sweden were members of the eco-labeling scheme at the very beginning, Finland joined in 1990 and Iceland in 1991. Denmark entered the system in 1997 [170].

Short summary system or initiative:	Extension system:	
Criteria are developed for fuels and for biofuel pellets, among 66 other product groups [181]. The criteria for biofuel pellets include requirements on manufacturing methods, transportation and storage. The criteria for fuels include requirements for fuels with at least 1/3 volume of renewable raw materials.	Principles included:	Y
	Criteria included:	Y
	Indicators included:	Y
Context:		
The Nordic Ecolabel is the official ecolabel for the Nordic countries, introduced by the Nordic Council of Ministers [181]. The Nordic Ecolabel is commonly known in the Nordic countries as “the Swan” because of its symbol.		
Status of system:		
In implementation. The ecolabel has over 1000 licenses just in Sweden alone, for a total of 66 product areas.		
Planned activities:		

Structure system or initiative:	
Juridical basis:	Voluntary [181]
Participation:	The Nordic countries work together developing the Swan label scheme. This work is directed by the Nordic Eco-labeling Board, NMN, which has produced a set of regulations. A group of experts, including representatives from the appropriate sectors of industry, works on the Swan in order to develop the criteria. The proposals go from the group out for public review. After this, the relevant experts in the various Nordic countries process the criteria documents. The Nordic Eco-labeling Board (NMN) finally approves the criteria [170].
Local stakeholder involvement	Not explicitly mentioned
Monitoring performance:	-
Chain of custody system	Requirement biofuels: The licenceholder must safeguard the traceability of the Swan-labelled fuel in the production process to ensure that the Swan-labelled product is not mixed with products that are not Swan-labelled [182]. Requirement biofuel pellets: Purchased raw materials and pellets in production must be traceable. This requires description of/procedures for the fulfillment of the requirement. Documentation relating to purchased raw materials and arrivals dates to the plant must be available at the plant [183].
Level of detail CoC system:	<u>Verification</u> Companies applying for a license to use the Swan label must provide results from independent testing to prove that the criteria are met. The Swan organization checks that products fulfill the criteria using methods such as samples from independent laboratories, certificates and control visits. Approximately every three to five years, the criteria documents are reviewed and new licenses have to be applied for products carrying the Swan label, according to the revised criteria. The way of documentation is in general dependent of the requirement. In specific cases declarations from producers can also be accepted [170]. *For fuels:* Before a license is granted, Nordic Ecolabelling will conduct an on-site inspection to

	ensure that the requirements are fulfilled. During the inspection, the figures on which calculations are based, the original of submitted documents, measurement protocols, purchasing statistics etc. confirming fulfillment of the requirements must be available for examination. Each year by 31 March, the applicant must report on the preceding year's production. In the event of changes in relation to the calculation data used at the time of application, documentation must be submitted to Nordic Ecolabelling showing that the requirements continue to be adhered to [182]. Accreditation The local accredited offices, i.e. in Finland the Finnish Standards Association, take care of the licensing process, control systems and information dissemination, as well as marketing [170].

Further information on:	
Removal of trade barriers	
Costs:	For biofuel: An application fee is payable in connection with license applications. An annual fee is also payable based on the sales of the Swan-labelled fuel. Biofuel pellets: An application fee is charged to companies applying for licenses. There is an additional annual fee based on the revenues produced by the pellets carrying the Swan label [183]. General: The application fee for the Swan label is € 2000 (in 2005). The annual payment for the license is 0, 4 % of the sales of Swan products and 0,3 % for the sales of Swan services.

List of principles (requirements) included for fuel [182]:	
Description of the product chain:	
1	The applicant's business
2	Ingoing components in the production of the fuel
3	Energy consumed during production
4	Products and by-products
5	Transport of raw materials / semi-manufactures
Requirements applicable to the life cycle as a whole	
6	Emissions of GHGs
7	Energy consumption
Requirements applicable to vegetable raw materials	
8	The traceability and documentation of vegetable raw materials
9	Vegetable raw materials that must not be used
10	CO2 balance in the production of biomass
11	Certified vegetable raw materials
Requirements applicable to the finished product	
12	Harmful substances in exhaust fumes *(not listed in criteria)*
13	Quality requirements *(not listed in criteria)*
14	Working conditions
	Requirements for regulation and authority
15	Statutes and regulations
16-19	Quality requirements: responsibility label, documentation, quality fuel, planned changes, unforeseen deviations, traceability, marketing *(not listed in criteria)*
List of principles included for biofuel pellets [183]:	
Regulatory requirements	
1	Take-back system *(not listed in criteria)*
2	Laws and regulations
Raw materials	
3	Wood raw material
4	Origin of wood raw materials
5	Proportion of certified raw material
6.	Handling of the chip raw material
7	Additives
Energy consumption	
8	Energy consumption during manufacture

9	Fuels influencing the GHG effect
10	Follow-up of energy consumption
Manufacturer's continual assessment of fuel pellet grade	
11	Annual 3rd party inspection *(not listed in criteria)*
12	Daily inspection *(not listed in criteria)*
Other requirements	
13	Delivery to the consumer *(not listed in criteria)*
14	Packaging *(not listed in criteria)*
15	Grade inspection *(not listed in criteria)*
16-18	Consumer information: Delivery specification, storage of loose fuel pellets by consumer, marketing *(not listed in criteria)*

List of criteria and indicators:

Criteria **for biofuels**	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
1. A description of the applicant's business must be submitted.	This description must include: - Details of the products for which a Swan Label is sought - The geographical location of production - A description of the sales stage in the product chain, which specifies whether the customer group is limited and whether the product is sold on the market in its pure form only or whether it might also occur as a component of blended products		
2. Ingoing components in the production of the fuel: The producer must account for all raw materials, chemical additives and process chemicals used in the production of the fuel.	The documentation must show that at least one-third (volume %) of the finished fuel product is based on renewable raw materials. A brief description must also be provided of the technology behind the process in which renewable raw materials are converted to fuel: - Complete formula of the product for which the Swan label is sought as well as product safety data sheets on all chemical additives and process chemicals. Form A in Appendix 5 may be used for documenting raw materials, chemicals and their volumes. - The producer's description of the process technology.		
3. The producer of the fuel must provide details of the energy sources used and energy consumed (MJ) in the production of the renewable components of the fuel.	Documentation according to the requirement.		
4. The producer must specify the products and by-products formed in the process.	Documentation must also be provided of the purchasers of any by-products and the use to which they are put. - Documentation according to the requirement. - Invoicing base showing quantities and buyers of the by-products.		
5. The fuel producer must specify transport distances and transport means used in shipping raw materials/semi-manufactures.	Transport relating to the distribution of the Swan-labelled fuel is not to be included in the calculation. - Documentation according to the requirement.		
6. Over the course of the life cycle, emissions of greenhouse gases must not exceed 50 g of CO2 equivalents/MJ of fuel.	A life cycle analysis with a focus on climate conducted in accordance with the principles contained in ISO 14040, ISO 14044 and the guidelines provided in Appendix. The analysis must be performed by either a competent and independent third party or by the applicant. In the latter case a competent and independent third party must confirm that the analysis was performed in accordance with the principles embodied in ISO 14040 and ISO 14044 and the guidelines in Appendix.	See also technical report for methodology	
7. Energy consumed in the production and transport of a Swan-labelled fuel must not exceed 1.4 MJ per MJ of fuel produced. Energy consumption associated with raw material production, production of the fuel and transport must be included in the calculations.	A life cycle analysis focusing on energy conducted on the basis of the principles contained in ISO 14040, ISO 14044 and the guidelines provided in Appendix. In addition the same documentation requirements apply here as for (6).		
8. The licenceholder must: - Ensure that all vegetable raw materials are traceable	* The raw material producer must provide supplier data (name and owner of the forest/crop/production unit), the Latin name of the plant and its geographical origin		

- Ensure that the raw material does not originate in areas in which biodiversity or values worthy of protection for social reasons are under threat. Nordic Ecolabelling reserves the right to require further documentation in the event of uncertainty about whether the raw material originates in areas in which biodiversity or values worthy of protection for social reasons are under threat. If it transpires that raw materials originating in areas in which biodiversity or values worthy of protection for social reasons are under threat are used, Nordic Ecolabelling may revoke the license - Compile a list of raw material suppliers.	(country, state and region/province/municipality and the address of the forest/crop/ production unit) of the raw material used in the production of the fuel. * Form in Appendix can be used to document the origins of the raw material. The form must be completed by the producer of the vegetable raw material. * The licenceholder's list of raw material suppliers will be checked on site.		
9. Corn must not be used in the production of Swan-labelled fuels. Corn is defined at the end of the criteria document.	The fuel producer must describe the means used to ensure that corn is not used as a raw material during the period of validity of the license.		
10. Biomass must not be cultivated on land that binds up large quantities of carbon. If the cultivation of biomass has resulted in a change in land use since November 2005, any emissions of carbon must be repaid, using the fuel in question, within a period of no more than 20 years. This means that the total net reduction in emissions of fossil carbon achieved by replacing the equivalent fossil fuel with the fuel over a 20-year period is greater than any non-recurring emission resulting from the change in land use.	* The raw material producer's statement on the date on which biomass production was established. * In the event of changes in land use since 2005 the licenceholder must show by means of calculations that the change in land use has not resulted in a negative CO2 balance. The calculation must be verified by a competent and independent third party.		The calculation of the CO2 balance may for example be based on the "carbon payback time" method described in Department of Transport, UK:2007: Carbon and Sustainability Reporting within the Renewable Transport Fuel Obligation (Appendix H, page 98 – 105).
11. 100% of all palm oil, soybean oil and sugar cane and 70% of all wood raw materials (including sawdust and chippings from sawmill operations) used in the production of the fuel must be certified in accordance with a standard and certification system specified in Appendix.	Certification must be performed by an independent third party. The requirement limit must be fulfilled separately by each raw material, but exemptions from the requirement are granted in the case of raw materials present in the fuel in quantities of less than 5%. - Overview of the proportion (%) of certified raw materials used in the fuel. - Copy of a certificate signed by an approved certification body		This standard must balance economic, ecological and social interests and comply with Agenda 21 and Forestry principles.
14. The licenceholder must ensure that biomass and other raw material producers and the fuel producer have plans in place for fulfilling UN and ILO Conventions.	- The UN's Convention on the Rights of the Child, Article 32 - The UN's Convention (61/295) on the Rights of Indigenous People - ILO Convention No. 105 concerning the Abolition of Forced Labor - ILO Convention No. 29 concerning Forced Labour - ILO Convention No. 87 on Freedom of Association and Protection of Right to Organise - ILO Convention No. 98 concerning the Right to Organise and Collective Bargaining - ILO Convention No. 170 concerning Safety in use of Chemicals at Work - ILO Convention No. 155 concerning Occupational Safety and Health and the Working Environment - ILO Convention No. 148 concerning Working Environment (Air Pollution, Noise and Vibration) The plans of all raw material producers and fuel producers with a description of the work conducted to fulfill the conventions at the production sites.		

15. All applicable provisions on safety and working environment, environmental legislation, plant-specific conditions/licenses and the Convention on International Trade in Endangered Species (CITES) must be adhered to at all production sites and product chain stages for the Swan-labelled fuel.	Nordic Ecolabelling may revoke the license if this requirement is not fulfilled.		
Criteria **for biofuel pellets [183]**	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
8. The manufacturer must guarantee adherence to safety regulations, working environment legislation, environmental legislation and conditions/concessions specific to the operations at all sites where the Swan-labelled fuel is manufactured.	Declaration required		
9. The raw materials must fulfill the current classification according to CEN/TS 14961 class 1.2.1.1 "Chemically untreated wood residues, wood without bark" or according to 1.1.2."Forest and plantation wood, stem wood". Residues from wood processing that contain adhesives or other contaminants may not be used.	Note: Residues of processed wood may be used if pure wood elements have been bonded and the wood product contains less than 1 kg adhesive per 100 kg. Chippings from municipal waste must not be used. Declaration required		
10. If virgin raw materials are used to manufacture the pellets, the pellets manufacturer must ensure that raw materials do not originate from forest environments meriting protection due to their high biological and/or social value. Nordic Ecolabelling may revoke a license if it is found that wood raw materials are derived from forest environments of this type.	Declaration in Appendix. Nordic Ecolabelling may request further documentation if there is any cause to suspect that virgin wood raw materials are derived from forest environments meriting protection due to their high biological and/or social value.		
11. If virgin wood raw material is used at least 70% per annum of the raw material from virgin wood must come from certified forests.	Certified forestry is forestry managed in compliance with standards fulfilling Nordic Ecolabelling requirements on sustainable forestry.		This standard must balance economic, ecological and social interests and comply with Agenda 21 and Forestry principles.
12. The manufacturer shall lay down requirements as to how suppliers handle the chip raw material to eliminate the risk of contamination. Such requirements shall include instructions on the nature of the surface for storing the raw material as well as transportation and unloading. The manufacturer must also visit the raw material supplier and document the visit in a report.	The manufacturer's requirements must be documented. Documented reports from visits to suppliers must be kept at the manufacturing plant. Description of the requirements that the manufacturer sets of suppliers of chip material.		
13. The use of additives is prohibited. Exceptions: Nordic Ecolabelling may approve the use of additives if the following items are fulfilled: * Chemically untreated biomass is used (as per CEN/TS 14961), * The quantity of additives does not exceed 2% w/w, * The levels of heavy metals- and the halogen content in the pellets with additives are equivalent to those in pure	Exceptions can not be given for such additives, which according to the directives of waste, can not be burned in local fireplaces. Required: * Declaration in Appendix 5 if no additives are used. * If additives are used, certification from an accredited laboratory is required as well as a laboratory test report containing emission and ash content analyses.		

wood. The manufacturer shall also demonstrate that neither emissions nor ash content are influenced from a health or environmental perspective.			
14. The manufacture of the pellets must not consume more than 1200 kWh of primary energy per ton of pellets. An estimate of energy consumption shall be made. The annual average energy consumption per ton of pellets shall be specified. The different energy sources shall be specified separately.	The requirement covers the following processes: barking, chipping, drying, grinding, boiling, pressing, cooling and screening, and any intermediate stages. If virgin wood chips are purchased from a supplier, the energy used by the supplier for barking and chipping shall be included in the calculation of energy consumption. Transportation, premises and packing are exempt. The energy consumed by premises includes heating and lighting. Required: An estimate of energy consumption. The requirement is also checked on site. If electricity is used, the consumption in kWhel shall be multiplied by 2.5 to give the equivalent primary energy.		Standard values (given in table) shall be used. If national values (production country) which to be used, shall values which are used for reporting for the specific country, according to the air and climate conventions to the Commission, be used.
15. Fuels that are used during pellets production must produce a maximum greenhouse gas contribution of 100 kg CO2 per ton of pellets. The requirement covers the following processes: boiling and drying. The following factors shall be used in the estimation.	An estimate of the influence on the greenhouse effect. See Appendix 5. Requirement also checked on site.		The standard values in the table shall be used. If national values (production country) which to be used, shall values which are used for reporting for the specific country, according to the air and climate conventions to the Commission, be used.
16. The energy consumption shall be followed up on an annual basis, collated and documented. The various types of energy shall be followed up individually and reported as a figure per ton of pellets.	A summary shall be kept by the licensee. Requirement also checked on site.		The standard values in table shall be used. If national values (production country) which to be used, shall values which are used for reporting for the specific country, according to the air and climate conventions to the Commission, be used.

DRAX Power Limited (biomass)

General characteristics:	
Status:	
Geographical coverage:	Worldwide
Scope:	Biomass (production until delivery at gate)
Initiator system:	Drax Group

Short summary system or initiative:	Extension system:	
Drax has established sustainability principles for biomass, until delivery at the gate. The biomass is used for power generation in the UK [184].	Principles	Y
	Criteria	Semi
	Indicators	N
Context:		
The biomass sourcing principles are based on the developing regulatory and policy initiatives of the UK, European Union and other markets. Over time Drax seeks to amend or improve them by working with accredited bodies to develop the use of internationally recognized standards and principles which will apply to all of the biomass procurement activities [184].		
Status of system:		
In implementation		
Planned activities:		
Drax will engage a qualified third party to develop and implement a rigorous program of audit and verification of biomass supply chains to ensure compliance against these principles and our policy [184].		

Structure system or initiative:	
Juridical basis:	Voluntary (company initiative)
Participation:	-
Local stakeholder involvement	-
Monitoring performance:	-
Chain of custody system	-
Level of detail (CoC) system:	-

Further information on:	
Removal of trade barriers	-
Costs:	-

List of principles included [184]	
1	Significantly reduce greenhouse gas emissions* compared with coal-fired generation and give preference to biomass sources that maximize this benefit.
2	Not result in a net release of carbon from the vegetation and soil of either forests or agricultural lands.
3	Not endanger food supply or communities where the use of biomass is essential for subsistence (for example, heat, medicines, building materials).
4	Not adversely affect protected or vulnerable biodiversity and where possible we will give preference to biomass production that strengthens biodiversity.
5	Deploy good practices to protect and/or improve soil, water (both ground and surface) and air quality.
6	Contribute to local prosperity in the area of supply chain management and biomass production.
7	Contribute to the social well being of employees and the local population in the area of the biomass production.

*

STAR – Etha Star and FAME Star

General characteristics:	
Status:	In development since August 2008
Geographical coverage:	EU and Switzerland
Scope:	Biofuels (specified to biodiesel and bioethanol)
Initiator system:	The consulting company ENERS Energy Concept, in collaboration with Alcosuisse, Fair Energy and Dr. E. Gnansounou, head of the Bioenergy and Energy Planning (BPE) research group of EPFL (former Laboratory of Energy Systems) [185]

Short summary system or initiative:	Extension system:	
The present project aims at setting up a label for fuel-bioethanol (etha STAR) and fuel-biodiesel (fame STAR) for use in the EU and the Swiss vehicle fuel market [185]	Principles	Y (draft)
	Criteria	N
	Indicators	N
Context:		
This initiative follows the recent adoption of the European Directive on the promotion of the use of renewable energy (which defines sustainability criteria applicable to biofuels) and the entry into force on 1 July 2008 in Switzerland of the new Ordinance on the taxation of mineral oil (Oimpmin) [185]		
Status of system:		
Under development		
Planned activities:		

Structure system or initiative:	
Juridical basis:	The organization of the label is based on four bodies, namely: the Steering Committee, the Advisory Board, Management and Stakeholders. Label is voluntary [185]
Participation:	The group of stakeholders finally consists of potential clients (producers and/or importers of biofuels). The latter will be subject to an annual fee to help finance the label.
Local stakeholder involvement	
Monitoring performance:	
Chain of custody system	
Level of detail (CoC) system:	

Further information on:	
Removal of trade barriers	-
Costs:	-

For the technical aspects, the major criterion is the compliance with European standards on the quality of fuel (EN15376 for bioethanol and EN 14214 for biodiesel) and their translation to the Swiss context. The development work on the establishment of an international standard (ISO) for liquid biofuels will also be closely monitored. This label is therefore firstly a measure of technical quality of biofuels.
These technical aspects are complemented by social and environmental criteria, as listed below [185].

List of principles included [185]	
(Provisional) environmental principles and criteria:	
1.	Greenhouse gas (GHG) balance: reduction of at least 50% of life-cycle greenhouse gas emissions with respect to conventional gasoline from the first year, and of at least 60% by 2014
2	Global ecological impact: compliance with the criteria stated in Oimpmin /OEcobiC (CH) *The minimum requirements for a positive global ecological balance are met if:* ▪ *biofuels generate at least 40% less GHG emissions compared to gasoline* ▪ *biofuels do not damage the environment in a way significantly higher than gasoline* ▪ *raw materials for biofuels do not endanger tropical forest conservation or biological diversity*

3	Conservation of energy resources (use of renewable energy)
4	Minimization of life-cycle water consumption
5	Minimization of the effect on soil quality (monoculture)
6	Conservation of biodiversity (preservation of natural ecosystems and protected areas)
7	Minimization (and elimination if possible) of agricultural chemicals usage
8	Minimization (and progressive elimination) of slash and burn culture
Proposed social principles and criteria:	
9	Local food and energy security ▪ priority granted to human food and animal feed regarding the utilization of land and agricultural resources ▪ priority granted to local energy supply ▪ priority granted to marginal lands
10	Local communities ▪ integration, development and involvement of local communities ▪ priority granted to local workers
11	Working conditions ▪ compliance with fundamental conventions of the International Labour Organization ▪ compliance with social legislation at the place of production ▪ zero tolerance with child employment and slavery ▪ total transparency regarding the regularity of workers and employees ▪ setup and monitoring of health and safety policy regarding workers

LBE - Laborelec (biomass for electricity)

General characteristics:	
Status:	In implementation
Geographical coverage:	Country of destination: Belgium (as of May 2009) Source areas: worldwide
Scope:	Business-to-Business scheme: Mainly aimed at woody biomass. Agricultural residues are also a possibility. At present, LBE works with residues (its primary product has to be produced sustainably as well) only; agricultural primary products are not considered [160].
Initiator system:	Laborelec and SGS developed the Laborelec certification system (LBE) in 2005 on behalf of Electrabel. The system is in use since 2006 [160].

Short summary system or initiative:	Extension system:	
Electrabel implements, among other sustainability principles, the energy/CO2 balance of the supply chain including electricity use, fossil primary energy use and transport. The two main aims of the system are [160]: a) Full traceability of the resources that were used for manufacturing the biomass and the evidence that those resources are managed in a sustained way; b) Evaluation of the overall energy balance for the supply of each biomass feedstock including fossil energy and electricity for making the biomass suitable and transporting it to the biomass plant.	Principles included:	Y
	Criteria included:	N
	Indicators included:	N
Context:		
LBE corresponds with the policy of the Belgium government on a Green certificate System. The Green Certificate system is imposed to all energy companies in Belgium. The obligation is coupled with a penalty for an unrealized share of green power. In Belgium, to Green certificate systems are operative. In Flanders, the system is based upon the energy balance and the use of fossil energy along the supply chain that is subtracted 'pro rata' from the granted certificate of green electricity. In Wallonia, the system is based upon avoided fossil CO_2. LBE is at present the only system in Belgium that provides energy companies in Belgium a practical possibility to comply with the legal obligations. The government of Wallonia and Flanders approve the LBE procedure [160].		
Status of system:		
In implementation		
Planned activities:		
Extending Laborelec scheme to Dutch Cramer Criteria in process [186].		

Structure system or initiative:	
Juridical basis:	Business-to-Business: fulfillment of criteria in system is required to meet legal obligations in Belgium on green energy.
Participation:	LBE was set up as a response on national legislation. Some aspects (e.g. standard setting procedures, decision-making) are therefore covered by regional authorities [160].
Local stakeholder involvement	There is no (or not always) consultation of external stakeholders. This is not deemed necessary in order to establish the energy balance and traceability of resources [160].
Monitoring performance:	-
Chain of custody system	LBE verifies the product flow from the power plant to the biomass manufacturer (e.g. the pellet factory). It is similar to a mass balance system whereby the system enables administrative segregation. LBE does not require that verified and non-verified biomass are physically separated [160].
Level of detail (CoC) system:	*Accreditation* [160]*:* • Belgium recognizes SGS Belgium as the Certification Board for green certificates (based on an accreditation procedure). LBE does not specify requirements for CBs to become accredited (or for an accreditation body to perform accreditations). *Auditing* [160]*:*

	a) SGS ensures that auditing follows the LBE certification procedure. Usually, SGS carries out the audits and the certification itself. SGS also performs calculations for the energy balance. *Verification / assessment procedure* [160]: a) SGS can act as a verification body for possible other certifiers. b) Independent reporting is needed on the resource management in the country of origin (except if raw material is approved by endorsed system). This report is based on legislation and official documents of the country and publications of international organizations. These reports on sustainability issues are usually compiled by SGS. c) *Endorsed certification systems* are for agricultural residues: RSPO, Global GAP, and GGLS2. For forestry: FSC d) Audit inspection reports based on a site visit prepared by an independent inspection body (also checks supplier declaration form). The inspectors check for clear violations of basic sustainability principles. In practice, this is likely to be limited. Country reports are used to determine the sustainability in general of the production circumstances of the country or region of origin. These regions are a priori approved by the relevant legislative bodies in Belgium. e) Supplier declaration form is needed about the origin of the raw material and the energy consumption related to production and local transport (delivered by biomass producer); f) Transport declaration form is needed on the long distance transportation data; g) The energy balance form is needed and filled in by SGS Belgium. The GHG balance is calculated from the outcome of the energy balance. LBE does not have its own logo or label (business-to-business scheme).

Further information on:	
Removal of trade barriers	
Costs:	

List of principles included: [160]	
1	Full traceability of the resources that were used for manufacturing the biomass.
	The evidence that those resources that were used for manufacturing the biomass are managed in a sustained way*.
2	Evaluation of the overall energy balance for the supply of each biomass feedstock** including fossil energy and electricity for making the biomass suitable and transporting it to the biomass plant.

* Note: Laborelec does not have its own sustainability standard.
** No minimum threshold but based on a linear scale of reward (in certificate form).

CO2 Star Label (biofuel)

General characteristics:	
Status:	Label implemented (project ended in 2008)
Geographical coverage:	Europe with a focus on Germany
Scope:	Biodiesel from rapeseed (RME, B100)
Initiator system:	The CO2Star Campaign was launched in the framework of the "Carbon Labeling" project supported by the European Commission within the 'Intelligent Energy for Europe" program [8].

Short summary system or initiative:	Extension system:	
In the framework of the Carbon Labeling project a CO2 label for biodiesel was developed (CO2Star) in cooperation with the German fuel retailer Q1. The label indicates the CO2 reductions of biodiesel from rapeseed (RME, B100) versus normal diesel [8].	Principles included:	Y
	Criteria included:	N
	Indicators included:	N
Context:		
The CO2Star Campaign was formed as a non-profit initiative in 2006 to introduce fuel and lubricant additives, first/second generation biofuels and other measures that can achieve fuel efficiency, air pollution and carbon reduction goals. CO2 Star is developing carbon labels for fuels, lubes, tires, cars, trucks, buses and products that are shipped to create a demand for low carbon transport solutions [8].		
Status of system:		
Several reports on the acceptance of the Label by consumers are already available on the website: http://www.co2star.eu/biodiesel_labelling/biodiesel_labelling.html		
Planned activities:		
The Carbon Labeling project will elaborate carbon life-cycle numbers for biodiesel on the basis of different vegetable oil feedstock that can be used in the development of carbon labels for fuels [8]. Project ended in 2008.		

Structure system or initiative:	
Juridical basis:	
Participation:	
Local stakeholder involvement	Stakeholders are involved throughout project activities [8].
Monitoring performance:	
Chain of custody system	
Level of detail CoC system:	

Further information on:	
Removal of trade barriers	
Costs:	

List of principles included:	
1	CO2 reduction (60%) RME, B100 versus fossil fuel diesel (applied for biodiesel rapeseed in Germany)

Sustainable Biodiesel Alliance USA (biofuels)

General characteristics:	
Status:	Development of principles and baseline practices
Geographical coverage:	Located in the USA
Scope:	Biodiesel
Initiator system:	SBA is a non-profit organization to promote sustainable biodiesel practices founded in December 2006.

Short summary system or initiative:	Extension system:	
The Sustainable Biodiesel Alliance (SBA), based in the USA, aims to promote sustainable biodiesel practices, including the harvesting, production and distribution of biodiesel fuels. The ultimate goal is to create best practice standards for verifying that all points in the production and distribution chain are in compliance with the SBA's certification standards [187].	Principles included:	Y
	Criteria included:	N
	Indicators included:	N
Context:		
Initiators aim to promote sustainable energy in the US		
Status of system:		
Four work groups (Feedstock, Production, Distribution, End Users) have developed draft principles and baseline practices for biodiesel production and distribution, which were open for public feedback in August 2008 and ratified in September 2008 [187]. The baseline practices are specified for feedstock producers, biodiesel producers, distributors and end users. Beside baseline practices to improve sustainability, additional practices are provided to guarantee the quality of the biodiesel.		
Planned activities:		
Over the next years, as the SBA gathers information from pilot programs and participating SBA members, more specific sustainability standards and indicators will be developed. These standards will ultimately serve as the criteria for a SBA Program [188]. The SBA is working with NearBio (biodiesel retail locator) to include SBA pilot program fuel locations, university partner programs and once certification is available, certified sustainable biodiesel.		

Structure system or initiative:	
Juridical basis:	Voluntary
Participation:	The criteria and standards are developed by stakeholders; representatives from all segments of the biodiesel industry [188].
Local stakeholder involvement	Not specifically mentioned as a baseline practice or principle
Monitoring performance:	-
Chain of custody system	-
Level of detail CoC system:	-

Further information on:	
Removal of trade barriers	-
Costs:	-

List of principles included [188]:	
1	Greenhouse Gas Emissions: Sustainable biodiesel results in net GHG emissions reductions compared to fossil fuels when analyzed via a life-cycle assessment.
2	Energy Conservation: Sustainable biodiesel production improves energy and resource conservation. Wasteful use of fossil fuels should not be replaced with wasteful use of biodiesel. Instead, significant reductions in total consumption, together with increased conservation, shall be a priority.
3	Soil: Sustainable biodiesel does not degrade or damage soils and should contribute to long-term maintenance and improvement of soil quality.
4	Water: Sustainable biodiesel production does not contaminate or imperil water resources but contributes to improved water quality and efficient utilization.
5	Air: Sustainable biodiesel production and use improves air quality and does not lead to increased air pollution as compared to fossil fuels.
6	Biodiversity Conservation: Sustainable biodiesel production does not lead to the destruction, degradation or declassification of high conservation value areas; areas of high biodiversity; habitats

	of rare, threatened or endangered species; or rare, threatened or endangered ecosystems. Protected areas, including grasslands, wetlands, forests etc. should not be declassified or appropriated for biodiesel crop production. At the landscape level, sustainable biodiesel production systems contribute to the conservation and maintenance of native biological diversity
7	Genetically Modified Organisms (GMOs): Sustainable biodiesel is derived from non GMO feedstock. However, if GMOs are used for the production of biodiesel, it shall be made transparent, so that producers and consumers can make informed decisions.
8	Agrochemicals: Sustainable biodiesel crop production minimizes, and eliminates whenever possible, the use of dangerous agrochemicals. Agrochemicals that are hazardous to the environment, workers, and local communities will not be used. Chemicals used are non-persistent and chemicals that are endocrine disrupting, carcinogenic or mutagenic in humans should be phased out. Preference should be given to the selection of crops and cropping systems that are productive and sustainable without reliance on agrochemicals. *Baseline practices also sustainable sourcing*
9	Next Generation Feedstock (Feedstock that is currently under development but not yet used commercially in the US such as algae): Should be developed with the consideration of the aforementioned principles.
10	Food Security: Sustainable production of biodiesel does not jeopardize food security by displacing land or water used for growing critical food crops with biodiesel feedstock crops.
11	Local Communities: Local communities are an integral part of the development of the sustainable biodiesel industry. Local strategies for biodiesel production with citizen input are created. Local consumption of sustainable biodiesel is prioritized and encouraged.
12	Communities and Workers: Family and small holder farmers are not to be displaced to grow or harvest biodiesel feedstock. Farmers should receive fair compensation for the biodiesel feedstock they produce. The health and safety of workers and communities should be protected. In addition, fair / livable wages for agricultural workers and workers at biodiesel production facilities are ensured.
13	Local consumption: Local consumption is encouraged and prioritized.
14	*Waste* *Specific baseline practices are given for 1) waste and rendered oils and 2) waste handling and reduction. This is, however, not a principle.*

The principles are translated to baseline practices.

List of criteria and indicators:

Minimum baseline practices	Indicator + indication accuracy	Methodology used	Databases used:
1a. Sustainable biodiesel feedstock producers shall - • Use marginal lands or existing croplands versus forests, grasslands or pristine ecosystems for biodiesel feedstock crops • Not displace critical food crops, rather should rotate with food crops when possible • Select crops and crop rotations based in part upon optimizing carbon sequestration value • Not displace critical food crops, rather should rotate with food crops when possible • Utilize the highest biodiesel blend practical or available in all diesel equipment • Utilize minimal tillage for feedstock production • Consider carbon mile distance to crush and market (see local definition) • Evaluate and select extraction technology for minimum air emission impact • Sample soils to determine appropriate levels of application of fertilizers and chemicals • Identify significant aspects and impacts related to emission sequestration, develop improvement programs and monitor results.			
1b. Sustainable Biodiesel Distributors shall - • Use the highest practical blend of sustainable biodiesel in diesel equipment and vehicles to reduce GHG emissions • Use SBA certified biodiesel when available, if SBA certified biodiesel is not available then use biodiesel produced from sustainable feedstock (see feedstock guidelines) • Maintain transportation equipment with all emission equipment properly functioning • Include language in contracts with common carrier transporters a requirement to use biodiesel blends • Identify significant aspects and impacts related to emissions, develop improvement programs and monitor results.			
2a. Sustainable biodiesel feedstock producers shall- • Determine baseline energy usage and monitor efficiency with continuous improvement as a goal • Use biodiesel and renewable fuels (sustainable biofuels, wind, solar) when possible • Use the most energy efficient crush technology available. Evaluation of technology must include energy use and air emission profile. • Identify significant aspects and impacts related to energy use, develop improvement programs and monitor results.			
2b. Sustainable Biodiesel Producers shall- • Audit energy use and establish a baseline for continued improvement • Increase plant efficiency to reduce energy consumption • Use biodiesel or renewable energy to fire boilers, generators and on-site equipment • Use renewable energy sources on-site whenever possible • Employ cogeneration (combined heat and power – hot exhaust gas used to provide heat from combustion to provide electric) using waste energy from a third party (co-locating to use waste steam, landfill gas) when possible • Use passive solar, day lighting, and energy efficient bulbs • Refer to LEED standards for energy efficiency • Monitor energy consumption and energy balance (energy input and output) actively. • Identify significant aspects and impacts related to plant energy, develop improvement programs and monitor results.		Energy consumption monitored in (Kwh/gallon output, BTU/gallon output)	
2b. Sustainable Biodiesel End Users shall- • Blend sustainable biodiesel at the highest concentration that will satisfy all operating requirements as determined by the individual or fleet operator • Use transportation fuels responsibly and efficiently			
3a. Sustainable biodiesel feedstock producers shall - • Control and minimize soil erosion by employing practices designed to prevent wind and water erosion. • Enhance soil organic matter levels, help reduce soil compaction, and promote carbon sequestration in soil (which helps counteract atmospheric change due to greenhouse gas emissions) by the following practices: Reduce tillage where possible, Rotate crops, Recycle organic residues and materials back to the soil to increase soil organic matter Levels, Plant cover crops when practical, Identify significant aspects and impacts related to Soil Quality, develop improvement programs and monitor results.			
4a. Sustainable biodiesel feedstock producers shall -			

• Prioritize selection of crops that do not need irrigation • Adopt water-conserving strategies such as mulching, soil moisture monitoring and irrigation management, based upon weather conditions, soil moisture, and plant need. Use best management practices and scouting to minimize nutrient use and loss, and to minimize pesticide use. • Use best management practices and scouting to minimize nutrient use and loss, and to minimize pesticide use. • Place buffer strips around waterways to help prevent migration of soil and farm chemicals into surface waters. • Implement water use planning to help track and monitor water usage and eliminate waste. • Identify significant aspects and impacts related to water resources, develop improvement programs and monitor results.			
4b. Sustainable Biodiesel Producers shall- • Obtain all required local/state/federal water and wastewater permits. • Perform calculations and testing to identify the volume and constituents of proposed discharges. • Understand the controls, systems and regulations that need to be in place to accommodate both storm water events, and spill control. • Minimize or eliminate wastewater. • Discharge process water to municipal waste treatment facilities, treat and apply to land, send to commercial composting facilities, treat and re-use, evaporate on site, or handle in any other environmentally responsible manner. • Determine appropriate local conditions to maximize local benefit. • Identify significant aspects and impacts related to water resources, develop improvement programs and monitor results.			
Sustainable Biodiesel Producers shall- • Obtain an air permit from local/state/fed authority (specific requirements vary). • Determine the level of fugitive emissions if possible. • Calculate potential to emit (typically through material balance calculations) when it is not possible to determine exact levels of fugitive emissions. • Disclose precautions that are taken to avoid fugitive emissions (typically required by law). • Control the release of Methanol vapors > Various methanol vapor control strategies are listed. • Identify significant aspects and impacts related to air emissions, develop improvement programs and monitor results.		Methanol release is typically measured in pounds. Density" or weight / gallon of pure methanol [6.63 lbs/US gallon (Methanol purchased less methanol (pure) recovered = fugitive emissions + amount consumed in process]	
6a. Sustainable biodiesel feedstock producers shall - • Protect biological diversity and protect previously undeveloped habitats • Use native species when possible and farming systems in a way that does not deplete soil nutrients or reduce soil biodiversity • Avoid using genetically engineered crops unless proven safe by independent third party certification. • Ensure genetically engineered organisms are not released into the environment during processing • Use of GMO must be reported and documented • Identify significant aspects and impacts related to ecosystem protection, develop improvement programs and monitor results.			
8a. Sustainable sourcing > Sustainable Biodiesel Producers shall- • Operate efficient used equipment when possible • Use LEED certification as a guideline for construction • Consider carbon miles when sourcing materials (See local definition) • Use renewable chemicals such as bio-methanol or bio-ethanol when available • Use recycled methanol or ethanol from other industrial sources when available • Source materials as well as office supplies from local businesses. Local, then regional, then domestic. • Look to other groups for purchasing guidelines • Source feedstock from local sustainable providers when possible.			Purchasing guidelines such as: www.bcorporation.net and www.epa.gov
8b. Sustainable Biodiesel Distributors shall - • Consider carbon miles when purchasing and distributing biodiesel • Know supplier and quality • Source local SBA certified biodiesel when available • When SBA certified fuel is unavailable source locally produced biodiesel from local feedstock • When SBA certified biodiesel is not available, source biodiesel produced locally from local feedstock, when locally			

produced biodiesel is not available source domestic biodiesel made from domestic feedstock, by a local producer. • Provide transparency of supplier / feedstock to the customer • Educate the end user about sustainability and community benefit.			
8c. Sustainable Biodiesel End Users shall- • Source sustainable biodiesel from SBA certified producers if available • Source ASTM D6751 biodiesel from local biodiesel producer using local feedstock if SBA certified product is not available. • Source ASTM D6751 non-food based feedstock biodiesel, if locally processed fuel is not available. • Consider carbon benefit of sourced biodiesel against locally sourced petroleum diesel if locally produced biodiesel is not available.			
9a. Sustainable biodiesel feedstock producers shall- • Conform to all applicable feedstock principles and practices • Not use genetically modified or invasive species for emerging fuels feedstock unless proven safe by third party evaluation. • Implement control efforts to ensure containment of GMO and other invasive species.			
11a. Sustainable biodiesel feedstock producers shall- • Purchase feedstock primarily from local producers • Make local purchasing of other goods and services a priority			
11b. Sustainable Biodiesel Producers shall- • Integrate local communities into the development of the sustainable biodiesel industry. • Create local strategies for biodiesel production with citizen input • Ensure fair wages for workers at biodiesel production facilities • Communities and farmers producing biodiesel should have, to the greatest extent possible, ownership of biodiesel production and processing facilities. • Retain income generated from biodiesel production to the greatest extent possible, within local producing communities from the feedstock to processing • Prioritize local consumption over transporting or exporting biodiesel or biodiesel feedstock away from the communities and regions that produce them			
12a. Sustainable biodiesel feedstock producers shall- • Create and support a fair and safe work place • Follow the law regarding employment of minors and discrimination when hiring new employees and managing existing employees. • Set goals for workplace safety and establish rewards. • Implement all aspects of health and safety laws and regulations and continually look for ways to improve workplace safety. • Provide fair and livable wages to all employees based on job descriptions and location • Meet all applicable OSHA regulations regarding safety of workers • Support or be neutral to labor organizations. • Meet OHSAS 18001:2007			OHSAS 18001:2007
12b. Sustainable Biodiesel Producers shall • Implement documented Safety/Health Plan and Standard Operating Procedures • Use proper worker safety training (includes follow up training) • Conduct regular safety meetings this includes but is not limited to: standard hazardous material training (8 hr per employee including all staff who work onsite – office, janitorial, etc.), Conduct frequent safety meetings, audits, and drills, Meet all applicable building codes, • Meet all applicable Fire Codes (NFPA), Store all methanol and caustic materials in high hazard areas (create finite hazardous area), • Keep equipment well maintained and in good working order, • Provide clearly identified location and number of personal protective equipment, defibrillators, spill kits, first aid, wash-down/eyewash equipment etc.			
14a. Sustainable biodiesel feedstock producers shall- • Procure and handle waste and rendered oils within state and local regulations • Handle waste and rendered oils in a manner that avoids spills, minimizes nuisance odors and inhibits vermin infestation • Information regarding the operations of production and rendering systems shall be transparent.			

• Producers of rendered fats and oils must provide a safe and fair working environment for employees • Consider distance (carbon miles) from source in the sourcing decision • Ensure proper storage of oils and frequent pick up, In order to minimize the energy required for pre treatment. This can be accomplished by consolidating pick up points for waste vegetable oil. • Identify significant aspects and impacts related to recycled and rendered fats, oils and grease develop improvement programs and monitor results.			
14b. Sustainable Biodiesel Producers shall- • Eliminate waste where possible • Inventory and analyze solid and liquid waste • Know where waste is going • Handle waste in an environmentally responsible manner • Measure methanol efficiency (see air emissions) • Eliminate off gassing from solid and liquid waste products • Establish measures for continued improvement • Identify significant aspects and impacts related to waste handling and reduction, develop improvement programs and monitor results.			
Quality baseline practices mentioned below:			
Q1. Sustainable Biodiesel Producers shall- • Maintain a documented quality program. An example of a documented quality program is BQ9000. However, individual producers can implement their own comprehensive quality program. • Report delivered cloud point and meet customer requirements • Keep certificates of analysis on file for all fuel in inventory and all inventory sold in the past 12 months. • Take samples with a minimum 90-day retention time. • Follow handling guidelines described in NREL's Biodiesel Handling and Use Guidelines • Verify cleanliness of transport tanks before filling • Educate end users on impacts of vehicle age on biodiesel performance.			
Q2. Sustainable Biodiesel Distributors shall- • Purchase fuel that meets the federal standard ASTM D6751 or EN 14214 • Follow handling and storage guidelines in NREL's Biodiesel Handling and Use Guidelines • Keep samples and certificates of analysis for all fuel in inventory • Train employees to read and interpret certificates of analysis • Implement quality resolution program			
Q3. Sustainable Biodiesel End Users shall- • Require producer to maintain a quality program and insure compliance through the procurement contract • Work with distributor and provide feedback on equipment performance • Keep certificates of analysis for all fuel in inventory • Train employees to read and interpret certificates of analysis • Follow handling and storage guidelines in NREL's Biodiesel Handling and Use Guidelines • Sample each distribution point following diesel sampling procedures • Keep detailed maintenance records, and change service all equipment regularly.			

The Council on Sustainable Biomass Production CSBP (biomass for bioenergy)

General characteristics:	
Status:	Principles under development
Geographical coverage:	North America (USA and Canada)
Scope:	Biomass feedstock (incl. dedicated fuel crops, crop residues, purpose grown wood, forestry residues) for cellulosic bioenergy facilities
Initiator system:	In June 2007 Meridian Institute and Heissenbuttel Natural Resource Consulting convened a group of 28 individuals with a range of expertise and experience related to biofuels [189].

Short summary system or initiative:	Extension system:	
This is a multi-stakeholder initiative developing biomass to biofuel sustainability principles for the production of feedstocks for 2nd generation refineries (cellulosic refineries) [189].	Principles included:	N
	Criteria included:	N
	Indicators included:	N
Context:		
-		
Status of system:		
In October 2007, Meridian and HNRC, with guidance from a planning group of participants, organized a meeting to establish and adopt the vision, objectives, and a timeline. Multi-stakeholder process to develop principles and guidelines is ongoing [189].		
Planned activities:		
The principles and standards being developed are intended to reach the broadest land base possible by embracing the concept of continuous improvement. Fundamentally, the principles and standards will be economically practical and environmentally sound. The Council expects to develop a program over time that will provide for third party audit/certification [189].		

Structure system or initiative:	
Juridical basis:	Will be voluntary based
Participation:	Multi-stakeholder initiative: diverse organizations and interest groups that comprise or have a stake in the emerging cellulosic biomass industry, including the biofuels supply chain (from germplasm developers and agricultural producers to oil companies), academia, conservation organizations, foundations, and government agencies [189].
Local stakeholder involvement	-
Monitoring performance:	-
Chain of custody system	-
Level of detail CoC system:	-

Further information on:	
Removal of trade barriers	-
Costs:	-

List of principles included > Not available yet	
1	
2	
3	

WWF

General characteristics:	
Status:	-
Geographical coverage:	-
Scope:	Biomass and bioenergy
Initiator system:	World Wide Fund of Nature (WWF)

Short summary system or initiative:	Extension system:	
The World Wide Fund of Nature (WWF) is actively involved in the discussion of sustainable development of biomass of bioenergy.	Principles included:	Y
	Criteria included:	
	Indicators included:	
Context:		
Status of system:		
A study from [190], commissioned to the Öko-Institut, proposes a key set of socio-economic and environmental impacts to take into consideration. Recommendations are included as well.The report from [190] is mentioned as discussion paper for the further development of sustainability criteria for bioenergy. A paper from 2008 [191] shows the position of WWF with regard to the sustainability of bioenergy.		
Planned activities:		

WWF will only support bioenergy that is environmentally, socially and economically sustainable and considers that effective measures are needed to address the following issues [191]:

List of principles included:	
1	Bioenergy must deliver large positive energy and GHG balances over fossil fuels
2	Bioenergy feedstock must be selected on the basis of the most efficient GHG balance, from production through to processing and use
3	Bioenergy policies and programmes must address displacement effects that influence GHG balance, poverty and the environment
4	Bioenergy production areas must not be established through the indiscriminate conversion of natural ecosystems (natural and semi-natural forests, natural floodplains, wetlands & peat lands) that have high conservation values and/or critical carbon storage functions.
5	Bioenergy feedstocks must be produced using better management practices (BMPs)
6	Implementation of bioenergy policies must take into account food security and must not threaten the realization of the right to food
7	Governments must take measures to ensure an equitable playing field for the small producers
8	Social considerations and indigenous people's rights must be considered as a priority in bioenergy development

In WWF's view, the following environmental principles need to be addressed by any standard as a minimum:

- not damage high conservation value habitats and biodiversity;
- not degrade soil quality;
- not adversely impact the quantity and quality of freshwater resources;
- not lead to damaging releases of toxic compounds into the environment; and
- Lead to substantially positive lifecycle GHG balances compared to fossil equivalents.

Equally important, the following social principles must also be addressed as a minimum:

- The principle of full and effective participation of potentially-affected communities, including Free
- Prior Informed Consent whenever development affects indigenous lands, territories and resources
- The principle of 'do no harm' (any development should not contribute to poverty)
- Respect of traditional rights to land and resource use and access
- Respect for workers (health, safety and labour rights)

WWF strongly recommends the prevention of displacement to avoid unwanted impacts through the following measures:

- Use idle land and in particular already eroded, overgrazed and less fertile land only to establish new
- bioenergy production capacity;
- Increase productivity in the already existing plantations for example better management practices can
- significantly increase productivity in oil palm plantations;
- promote the use of waste and by-products as a source of bioenergy; and
- Establish functional and coherent land use, agriculture and rural development and energy policies that secure land allocation for food and fuel crops and reduce price fluctuations.

List of criteria and indicators:

Criteria	Indicator + indication accuracy (Q= Qualitative, D=Descriptive, quantitative, += Accurate, - = not accurate	Methodology used	Databases used:
GHG emissions from bioenergy cultivation are limited to 30 kg CO2 eq./GJ bioenergy [12]			
The GHG emissions of the complete life cycle has a maximum life cycle balance of 67% compared to crude oil combustion [12]			

National Biodiesel Board (NBB) in US (biofuels)

General characteristics:	
Status:	Principles developed
Geographical coverage:	USA
Scope:	Biodiesel from various feedstock
Initiator system:	National Biodiesel Board. This the national trade association representing the biodiesel industry as the coordinating body for research and development in the US [192].

Short summary system or initiative:	Extension system:	
The sustainability principles are seen as a set of ideals – goals for the entire industry. They are not intended to supplant other efforts related to biodiesel sustainability certification or to suggest support for any certification system [193].	Principles included:	Y
	Criteria included:	N
	Indicators included:	N
Context:		
The Renewable Fuel Standard in the US includes a requirement that specifies fuels must meet a threshold of 50% carbon reduction to be eligible [192].		
Status of system:		
A sustainability taskforce is established in February 2008 [192]. The Sustainability principles from NBB are primarily derived from existing principles developed by the RSB, the SBA and the 25x'25 group [193].		
Planned activities:		
The NBB has feedstock development programs in place that have the potential to bring sustainable agriculture to non-productive lands [192]. In the future, NBB intends to develop guidance statements that provide elaboration on each principle. This guidance will also borrow from existing work from other biofuel sustainability initiatives [193].		

Structure system or initiative:	
Participation:	NBB principles are based on existing principles – this enabled NBB to benefit from feedback from these groups (already developed in large stakeholder processes) [193].
Local stakeholder involvement	Principle 2 promotes transparent, participatory processes that involve all relevant stakeholders [193].
Monitoring performance:	-
Chain of custody system	-
Level of detail CoC system:	-

Further information on:	
Removal of trade barriers	-
Costs:	-

List of principles included [193]:	
1	Biodiesel production shall follow all applicable laws of the jurisdiction in which it is produced.
2	Biodiesel projects shall be developed and operated under appropriate, transparent, and participatory processes that involve all relevant stakeholders.
3	Biodiesel shall contribute to climate change mitigation by significantly reducing lifecycle GHG emissions as compared to fossil fuels. Producers shall strive to continuously improve that reduction.
4	Biodiesel production shall support human rights and labor rights, and shall ensure safe and decent working conditions.
5	Biodiesel production shall contribute to the social and economic development of local communities.
6	Biodiesel production shall strive to improve food security.
7	Throughout the supply chain, the biodiesel industry shall implement management systems that maintain and strive to improve biodiversity, areas of High Conservation Value, and the quality of natural resources such as soil, air, and water.
8	Biodiesel production shall respect natural resource rights, such as land and water rights.
9	All participants throughout biodiesel supply chain shall be dedicated to the ideal of continuous improvement. Members shall, through ongoing efforts, make advancements in the economic, social and environmental performance of the industry.

Corporate Europe Observatory CEO (Report) (biofuels)

General characteristics:	
Status:	Published a report on “Paving the way for agrofuels, EU policy, sustainability criteria and climate calculations”.
Geographical coverage:	International
Scope:	Biofuels
Initiator	European based research and campaign group targeting the threats to democracy, equity, social justice and the environment posed by the economic and political power of corporations and their lobby groups [194].

Short summary initiative:	Extension system:	
CEO questions the effectiveness of certification systems in its report and discussed amongst others [194]: - Greenhouse gas calculations come with high errors - Use of marginal lands to avoid competition with food is disputable, as such land can still contain diverse ecosystems, and forms the basis of a variety of societal activities. Moreover, production of biofuels cannot be steered by EU countries; - Most existing and future certification systems lack sufficient local stakeholder involvement; - The “meta approach” builds upon existing systems, which in many cases do not yet exist and the effectiveness of existing systems can be discussed. - Large-scale actors are far more able to face the administrative burden related to certification than small-scale producers. - Producers and traders can serve the certified market and benefit from the ‘green’ credibility of the certification, while simultaneously continuing to engage in bad practices elsewhere. - The credibility of the certification depends a lot on which system is used. The most expensive option, called ´track and trace´, follows a product from beginning to end. - The challenge of verification and monitoring is huge. - In many producer countries, human rights violations are strongly linked to companies and plantations producing soy and palm oil, which are among the potential future agrofuel feedstocks. As a result, existing ‘sustainability’ labels for these commodities or companies have already met with opposition from civil society.	Principles included:	-
	Criteria included:	-
	Indicators included:	-
Context:		
The report criticizes present sustainability initiatives of UK and Netherlands for requiring only a reporting obligation for the coming years without imposing measures to penalize unsustainable biofuels, except giving NGOs and consumers opportunity to share and blame unsustainable producers [9].		
Status of system:		
Planned activities:		

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