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## **RSB Conservation Impact Assessment Guidelines**

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## **Note on the use of this document**

These guidelines help the operator to conduct a Conservation Impact Assessment by evaluating potential impacts of operations on the conservation values that are potentially affected by biofuels operations.

They describe key aspects to be investigated during planning of new projects or ongoing activities, in order to identify potential impacts biofuel operations may cause to conservation values, including the use of invasive species, and, if relevant, good practices to minimize such impacts down to an acceptable level.

These guidelines should be used in priority by RSB participating operators that trigger a Conservation Impact Assessment, as defined under Principle 7 of the RSB Principles & Criteria (RSB-STD-01-001). However, it is recommended that all RSB participating operators get acquainted with the issues described herein.

These guidelines may equally be used by the auditor and other actors involved in the verification of compliance, in order to get a better understanding of key-aspects to be considered during certification process.

Under no circumstances should this document serve as the basis for verification of compliance and audits of operators. No aspect of this document is normative.

These guidelines were developed in collaboration with:

**Coastal & Environmental Services**  
[www.cesnet.co.za](http://www.cesnet.co.za)

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# 1. Introduction

In the Biofuels Industry there is a potential for impacts on areas that contain conservation values (e.g. rare or threatened ecosystems, habitats or species). The purpose of this guideline is to assist in the definition and identification of these conservation values, and identify the impacts, assess their importance and propose procedures for assessing these in the context of an Environmental & Social Impact Assessment, and discuss how to mitigate these impacts. The RSB Principles were used to identify the components for this study and were used as an aid in compiling this chapter.

These guidelines have been developed to enable environmental practitioners, proponents of biofuels projects and stakeholders to understand, identify and manage areas containing conservation values of global, regional or local importance, which might be impacted when developing a biofuel project. This specialized impact assessment is a sub study within the larger Impact Assessment process and is triggered by the screening exercise described in RSB-GUI-01-002-02. It should be conducted using the methods and participatory processes recommended in the *Impact Assessment Guidelines (RSB-GUI-01-002-01)*. The RSB Principle 7 & Criteria (RSB-STD-01-001), which is relevant to impacts on biodiversity, ecosystems and conservation values are contained in the box below. Principle 7 is divided into five Criteria which are used to formulate the objectives of the guidelines and form the basis for the Guideline Report.

The first section in these guidelines deals with the **identification of conservation values, ecosystem functions/services, buffer zones and ecological corridors, as well as the assessment of invasiveness of the crop used for feedstock production**. It is followed by a section that allows assessing the **nature and intensity of impacts** that will potentially affect these conservation values. The third section describes possible **mitigation measures and monitoring** with regards to potential impacts, in order to achieve compliance with Principle 7. Note that Annex I describes a **Rapid Assessment**, which can be used in combination with RSB-GUI-01-002-04 in order to conduct a Rapid Environmental and Social Assessment (RESA).

Specifically these guidelines will:

- Be practical so that impact assessment professionals, biofuel operators and auditors can accurately identify areas containing conservation values of global, regional or local importance;
- Be generic for use in any country, for farm and natural lands;
- Ensure that conservation values of global, regional or local importance are not in any way left worse off or negatively impacted by a biofuels project;
- Ensure that existing Ecosystem functions and services are maintained;
- Ensure that Buffer Zones are protected, restored or created;
- Ensure that Ecological corridors are protected, restored or created to minimize fragmentation;
- Determine that the crop species used for Biofuel production is not considered invasive under local conditions.

To ensure a project produces biofuel compliant with RSB guidelines, (and the Renewable Energy Directive<sup>1</sup> guidelines of the European Union), potential areas for biofuel production or existing production areas need to be assessed and managed according to these guidelines and a justification for their inclusion or exclusion provided.

There are five criteria that need to be met in order to achieve Principle 7 (Box 1). All these criteria are underpinned by the concept of conservation values, and this concept is therefore explained in some detail first, before dealing with the specifics of Criteria 7a – 7e.

### **Box 1**

#### **Principle 7. Biofuel operations shall avoid negative impacts on biodiversity, ecosystems, and conservation values.**

- Criterion 7a. Conservation values of local, regional or global importance within the potential or existing area of operation shall be maintained or enhanced.
- Criterion 7b. Ecosystem functions and services that are directly affected by biofuel operations shall be maintained or enhanced.
- Criterion 7c. Biofuel operations shall protect, restore or create buffer zones.
- Criterion 7d. Ecological corridors shall be protected, restored or created to minimize fragmentation of habitats.
- Criterion 7e. Biofuel operations shall prevent invasive species from invading areas outside the operation site.

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<sup>1</sup> The Renewable Energy Directive (RED) is intended to promote the use of renewable energy in Europe, and stipulates that Biofuel production should be environmentally sustainable and meet certain targets laid down in the directive. Furthermore, it states that if land with high stocks of carbon in its soil or vegetation need to be converted for the production of raw materials for Biofuels and other bioliquids, some of the stored carbon will be released into the atmosphere leading to the formation of carbon dioxide. This could offset the benefits of biofuels through greenhouse gas emissions, and consequently the full carbon effects of such conversions must be accounted for in calculating the greenhouse gas savings of any biofuels project. The RSB have similar guidelines and standards.

## **2. Identification and management of conservation values, ecosystem functions/services, buffer zones, ecological corridors and invasive species.**

### ***2.1 Definition of Conservation Values***

The term “conservation values” is repeatedly used across Principle 7. This term encompasses all the features, which would make an area worth being conserved as such. It includes biodiversity, ecosystem services and functions, as well as social aspects, such as the extraction of resources for subsistence, health, livelihood and the use of such areas for cultural practices. The intent of Principle 7 is to make sure that conservation values, which will be considered of importance from a local, regional or global perspective are adequately identified, monitored and maintained. Areas containing conservation values of global, regional or local importance are usually areas that show little disturbance from agriculture or forestry, whether commercial and large scale or small scale informal agricultural developments. These areas are often undisturbed native ecosystems. In addition, such areas may also be adjacent to native systems or protected areas and form buffer zones between the protected areas and the developed or agricultural areas. However, note that conservation values can be found on land under cultivation and that some agricultural activities may be compatible with the maintaining of conservation values (e.g. agro-ecosystems). Hence, existing biofuels operation sites should as well be evaluated. Ecological corridors which link adjacent areas with conservation values of local, regional or global importance should also be identified.

Examples of conservation values of local, regional or global importance include, but are not limited to:

- The presence of rare, threatened or protected species, including any species included in IUCN red list under the categories “vulnerable”, “endangered” and “critically endangered”.
- Pristine ecosystems
- The presence of viable populations of natural species in natural pattern of distribution and abundance, i.e. natural ecosystems, with a limited influence from human activities.
- An important stock of Carbon under solid, liquid or gaseous forms.
- An outstanding biodiversity level, as per the definition provided in the glossary.
- Ecosystem services of local, regional or global importance, i.e. those services received by human populations from ecosystems (see criterion 7b and glossary), with an importance for their survival, subsistence and/or livelihood.
- Critical resources for local population’s subsistence, health and/or livelihood.
- Cultural importance from a local, regional or global perspective.

## 2.2 Identification of Conservation Values (Criterion 7a)

To comply with Principle 7, a fundamental task is to first identify the conservation values that are contained in the potential biofuel production areas or in an existing biofuel production areas. Preliminary questions about conservations values are part of the screening exercise described in RSB-GUI-01-002-02. You may use the same responses as in the screening exercise to answer some the questions below (Desk Research).

The objective of these guidelines is thus to take the operator and impact assessment specialist through a more thorough identification of the conservation values of the land to be potentially used for biofuel production or that is currently being used, following a land-use impact assessment. The land use impact assessment is a top-down combination of desk and field work, in consultation with local experts and communities, and takes both conservation and economic aspects into consideration. The land-use impact assessment includes at least: 1) screening, i.e. review of publicly available data and maps, 2) landscape-level assessment, i.e. the consultation of national/regional experts and institutions, 3) site-level mapping, i.e. a detailed site-level assessment and planning through the consultation of local communities, and 4) responsible management, i.e. the implementation of responsible land management practices (e.g. conservation agriculture). Following this identification, the potential impact of operations on conservation values is assessed and mitigation measures proposed. It may be necessary to work with an ecological specialist in order to answer these questions.

QUESTIONS	Yes	No	Remarks
<b>Was the area recorded as or included in any of the categories below anytime between the 1<sup>st</sup> of January 2009<sup>2</sup> and now?</b>			<b>Desk Research</b>
1. UNESCO's World Heritage Site			If Yes, "no go area". This means that you are not allowed to make any use of such area for any biofuel operation, unless feedstock production or processing operations are legally authorised as part of the conservation management for the area concerned
2. Ramsar Site			
3. IUCN Protected Areas 1 or 2			
4. Alliance for Zero Extinction (AZE) areas			
5. Legally protected area			
<b>Was the area recorded as or included in any of the categories below anytime between the 1<sup>st</sup> of January 2009<sup>2</sup> and now?</b>			<b>Desk Research</b>
1. Ecological corridor			If yes, "no-conversion area". This means that you are not allowed to convert such area for any biofuel
2. Buffer zone			

<sup>2</sup> Note that an earlier cut-off date should apply for palm oil and wood product, as described in the Guidance (RSB-GUI-01-000)

3. Area providing crucial ecosystem services			operation after the cut-off date. You may possibly use such area as it is (e.g. sustainable harvesting) provided that the conservation value(s) of such area is maintained or enhanced.	
4. High Conservation Value areas (HCVA)				
5. Key Biodiversity Area (KBA)				
6. Important Bird Area (IBA)				
7. IUCN Protected Areas 3 or 4				
8. Natural and semi-natural ecosystem (incl. forest or woodland)				
9. Landscape-scale forests and ecosystems				
10. Highly biodiverse grasslands and savannas				
11. Natura 2000 areas				
12. Lands an important stock of Carbon under solid, liquid or gaseous forms, such as, but not limited to, peatlands and primary forests.				
13. Wetlands (i.e. mangroves)				
<b>Does the consultation of experts, institutions, land-use planning or framework provide strong evidence that the area contained any of the conservation values of global, regional or local importance below anytime between the 1<sup>st</sup> of January 2009<sup>3</sup> and now?</b>				<b>Desk/Field Research</b>
1. Presence of rare, threatened or protected species (e.g. species from the IUCN global, regional or national red list under “vulnerable”, “endangered” or “critically endangered”).				If yes, “no-conversion area”. This means that you are not allowed to convert such area for any biofuel operation after the cut-off date. You may possibly use such area as it is (e.g. sustainable harvesting) provided that the conservation value(s) of such area is maintained or enhanced.
2. Presence of pristine/primary ecosystem				
3. Viable populations of natural species in natural pattern of distribution and abundance, i.e. natural ecosystems.				
4. Landscape-scale forest or ecosystems				
5. An important stock of Carbon under solid, liquid or gaseous forms, such as, but not limited to, peatlands and primary forests.				
6. Outstanding biodiversity level (number of species and/or species types and/or genetic variability among a species).				
7. Ecosystem services of local, regional or global importance (See also the next section)				
8. Critical resources for local population’s subsistence, health and/or livelihood.				

<sup>3</sup> Note that an earlier cut-off date should apply for palm oil and wood product, as described in the Guidance (RSB-GUI-01-000)

9. Cultural importance (e.g. graveyard, ritual site, etc.)			
<b>Does the consultation of local stakeholders provide evidence that the area contains any of the conservation values of global, regional or local importance below anytime between the 1<sup>st</sup> of January 2009<sup>3</sup> and now?</b>			<b>Field Research</b>
1. Presence of rare, threatened or protected species (e.g. species from the IUCN global, regional or national red list under “vulnerable”, “endangered” or “critically endangered”).			If yes, “no-conversion area”. This means that you are not allowed to convert such area for any biofuel operation after the cut-off date. You may possibly use such area as it is (e.g. sustainable harvesting) provided that the conservation value(s) of such area is maintained or enhanced.
2. Presence of pristine/primary ecosystem			
3. Viable populations of natural species in natural pattern of distribution and abundance, i.e. natural ecosystems.			
4. Landscape-scale forest or ecosystems			
5. An important stock of Carbon under solid, liquid or gaseous forms, such as, but not limited to, peatlands and primary forests.			
6. Outstanding biodiversity level (number of species and/or species types and/or genetic variability among a species).			
7. Ecosystem services of local, regional or global importance (See also the next section)			
8. Critical resources for local population’s subsistence, health and/or livelihood.			
9. Cultural importance (e.g. funeral site, ritual site, etc.)			
<b>In case of “yes” to any of the question above, can the conservation value(s) contained in the area be maintained through appropriate management? If so, please specify below which practices are implemented to maintain this/these conservation value(s).</b>			If no, then use of this area is not permitted.
a. ...			
b. ...			
c. ...			

Note that key impacts from feedstock production and suggested mitigation and monitoring measures are respectively detailed in Section 3 and Section 4.

### 2.3 Ecosystem Function and Services (Criterion 7b)

Under Criterion 7b the minimum requirement states that “Participating Operators shall implement practices through the Environmental and Social Management Plan (ESMP) that maintain ecosystem functions and services both inside and outside the operational site, which are directly affected by biofuel operations”.

To achieve compliance with Criterion 7b, the specialist will need to identify ecosystem functions and services relevant to an area of production. This may be achieved through a combined desk + field research about the proposed Biofuels project, and it may be necessary to work with an ecological specialist in order to answer the following questions.

QUESTIONS	Yes	No	Remarks
<b><i>Is the Project likely to have an influence on the following Ecosystem Functions particularly in environmentally sensitive areas?</i></b>			<b>Desk/Field Research</b>
<ul style="list-style-type: none"> <li>• Regeneration of an ecosystem which has become degraded</li> </ul>			If yes, you may possibly use such area provided that the ecosystem function(s) of such area is/are maintained or enhanced.
<ul style="list-style-type: none"> <li>• Succession of species into an ecosystem and thus displace natural ecosystem changes</li> </ul>			
<ul style="list-style-type: none"> <li>• Affect the natural genetic or species diversity of an ecosystem</li> </ul>			
<ul style="list-style-type: none"> <li>• Affect the diversity of ecosystems in the area</li> </ul>			
<ul style="list-style-type: none"> <li>• Interrupt or disturb natural cycles that affect the productivity of the ecosystem (e.g. decomposition of litter )</li> </ul>			
<b><i>Is the Project likely to have an influence the following Ecosystem Services particularly in environmentally sensitive areas?</i></b>			<b>Desk/Field Research</b>
<ul style="list-style-type: none"> <li>• Provisioning Services, such as plant nutrients or food for consumers</li> </ul>			If yes, you may possibly use such area provided that the ecosystem service(s) of such area is/are maintained or enhanced.
<ul style="list-style-type: none"> <li>• Regulating services: <ul style="list-style-type: none"> <li>• Affect on the micro-climate,</li> <li>• Disruption of or causing floods,</li> <li>• Other?</li> </ul> </li> </ul>			
<ul style="list-style-type: none"> <li>• Supporting services: <ul style="list-style-type: none"> <li>• Interference with nutrient cycling,</li> <li>• Affecting soil formation,</li> <li>• Upsetting growth of plants and primary production</li> <li>• Other?</li> </ul> </li> </ul>			
<b>In case of “yes” to any of the question above, can the ecosystem function(s) and service(s) contained in the area be maintained through appropriate management? If so, please specify below which practices are implemented to maintain those.</b>			If no, then use of this area is not allowed.

QUESTIONS	Yes	No	Remarks
a. ...			
b. ...			
c. ...			

## 2.4 Buffer Zones (Criterion 7c)

Minimum requirements under Criterion 7c state that “buffer zones shall be protected, restored or created to avoid negative impacts from biofuel operations on areas that are contiguous to the operation site” as well as “within the operational site, (...)to avoid negative impacts from the biofuel operations on areas that contain conservation value(s) of local, regional or global importance”.

In the RSB glossary (RSB-DOC-01-001), Buffer Zones are defined as follows:

*Buffers zones are small areas or strips of land in permanent vegetation, designed to intercept pollutants and manage other environmental concerns. Buffer Zones include the regions near the border of an area which is protected or managed for conservation, transition zones between areas managed for different objectives (including e.g. riparian buffer zones between rivers and production areas), or areas on the edge of protected areas that have land use controls and allow only activities compatible with protection of the core area, such as research, environmental education, recreation, and tourism. Buffers include: riparian buffers, filter strips, grassed waterways, shelterbelts, windbreaks, living snow fences, contour grass strips, crosswind trap strips, shallow water areas for wildlife, field borders, alley cropping, herbaceous wind barriers, and vegetative barriers. (Source: UNEP-WCMC and USDA NRCS)*

Buffer zones will need to be identified during the impact assessment process, and the size, extent, location and linkages determined in order to avoid critical impacts associated with habitat loss and habitat fragmentation. The report will need to recommend the following, as minimum requirements:

- Existing buffer zones within the production site shall be protected and remain unexploited.
- Existing buffer zones between the production site and the surrounding areas shall be protected or, if no such buffer zones exist, they shall be created.
- Within the production site, buffer zones shall be created around any area containing conservation values of local, regional or global importance, and remain unexploited.
- The size and features of the buffer zones to be created shall be adapted to the type of areas they separate and the practices implemented on the production site on a case by case basis.

## **2.5 Ecological Corridors (Criterion 7d)**

Criterion 7d states that “Ecological corridors shall be protected, restored or created to minimize fragmentation of habitats”.

In the RSB glossary (RSB-DOC-01-001), Ecological Corridors are defined as follows:

*A continuous strip of land or water that differs from the adjacent landscape on both sides, and allows movement of individuals and ecological processes between two or more habitat areas (Sanderson et al. 2003). Biological corridors help establish connectivity within biodiversity conservation corridors.*

Corridors will need to be identified during the impact assessment, and the size, extent, location and linkages determined in order to avoid critical impacts associated with habitat fragmentation. The report will need to recommend the following, as minimum requirements:

- Ecological corridors within the production site should be set aside with appropriate surrounding buffer zones and in no case exploited after the 1st of January 2009.
- Whenever the production site impairs the connectivity between surrounding ecosystems, ecological corridors shall be created by the operator.
- New ecological corridors shall be created within the production site if it is surrounded by areas containing wildlife; ecological corridors destroyed prior to the cut off date and for which the operator is directly accountable shall be restored.

## 2.6 Invasive Species (Criterion 7e)

Criterion 7e states that “Biofuel operations shall prevent invasive species from invading areas outside the operation site”.

The first step is to verify that the species you are using or planning to use is not prohibited in the country of operation. Participating Operators may contact any governmental institutions in charge of agriculture and/or environment and/or sanitary affairs or any organization working on conservation and environment. Prohibited crops in the country of operations are not allowed by the RSB Standard.

If no particular restriction exists at the country level, Participating Operators may browse the species recorded in the Global Invasive Species Database (GISD) and verify that the species in use or to be used was never recorded as highly invasive under similar conditions (similar climate, and similar local ecosystems, and similar soil types).

If no such information can be found or if the preceding steps are inconclusive, the impact assessment will need to include a weed risk assessment of the species in the local context. The specialist must follow the procedure for invasiveness/weed risk assessment that exists in the country of operation, and if no such procedure exists, then a risk assessment procedure described in Criterion 7e must be used. The IUCN Guidelines on Biofuels and Invasive Species<sup>4</sup> should be used to conduct this process. Other references can be found in the RSB Guidance document (RSB-GUI-01-000).

Following the risk assessment, the species must not be used a) if the risk assessment provides evidence of the species’ high invasive potential in the local context; b) if the risk assessment fails to provide evidence of the species’ non-invasiveness in the local context, following the precautionary approach (i.e. in absence of clear results).

The following questions can be used for this determination.

QUESTIONS	Yes	No	Remarks
Is the species in use or to be used prohibited in the country of operations?			If Yes, this species cannot be used.
Is the species in use or to be used recorded in the GISD as highly invasive under similar conditions (similar climate, and similar local ecosystems, and similar soil types)?			If Yes, this species cannot be used.
Did you conduct a Weed Risk Assessment recognized by the RSB or			If No, the species

<sup>4</sup> [http://cmsdata.iucn.org/downloads/iucn\\_guidelines\\_on\\_biofuels\\_and\\_invasive\\_species\\_.pdf](http://cmsdata.iucn.org/downloads/iucn_guidelines_on_biofuels_and_invasive_species_.pdf)

did the Weed Risk Assessment provide conclusive results?			cannot be used.
Did the Weed Risk Assessment or any other source reveal that the species in use or to be used has high potential of invasiveness under the conditions of operations?			If Yes, the species cannot be used.

### 3. Potential ecological impacts of biofuels operations

#### 3.1 Identification of key issues and impacts

There are a large number of potential impacts to the natural environment and conservation values associated with biofuel operations, in particular feedstock production. Although these have been incorporated into the RSB Principles & Criteria, for the purpose of this guideline it is necessary to list the most common impacts as sourced from the relevant literature. A list of key impacts to natural systems and sources of the impacts is provided in Table 1. It should be noted that it is necessary to consider both the direct impacts associated with the proposed development as well as potential cumulative impacts. While the direct impacts may be of low significance, their significance might be elevated when considered in the broader context (for example, a series of biofuel developments in a regional context).

**Table 1.** Potential direct impacts to the natural environment and conservation values associated with biofuel projects

Issue	Impact
Issue 1: Loss of indigenous vegetation	Impact 1: Disturbance of vegetation by construction process and establish of plantations Impact 2: Introduction of exotic or indigenous plants propagated from seed originating in another area.
Issue 2: Loss of endangered plant species	Impact 1: Disturbance of vegetation will result in loss of rare/endemic plants as a result of plantation establishment Impact 2: Introduction of cultivated plants and possible invasion of alien plant species will compete with rare and endangered plants
Issue 3: Removal of topsoil and soil erosion	Impact 1: Establishment of the plantation will increase the chances of soil erosion. Impact 2: Roads resulting in erosion between the plantation fields.
Issue 4: Presence, introduction and spread of alien plant species	Impact 1: Increase in alien plant species due to the establishment of a monoculture plantation
Issue 5: Loss of sensitive habitats	Impact 1: Destruction of the vegetation by establishing plantations. Impact 2: Establishing plantations could introduce exotic or indigenous plants and further loss of habitats
Issue 6: Loss of faunal diversity	Impact 1: Disturbance of vegetation will result in loss of habitat, and hence loss of animals. Impact 2: Introduction of cultivated plants and possible invasion of alien

Issue	Impact
	<p>plant species will displace habitats for animals</p> <p>Impact 3: Mono-culture plantations may result in shifts in community structures e.g. of birds and/or insects etc, resulting in species dominance and reduced species diversity.</p>
<i>Issue 7: Loss of animal species of special concern</i>	<p>Impact 1: Disturbance of vegetation will result in loss of in loss of habitat and possibly loss of rare/endemic animals</p> <p>Impact 2: Introduction of new habitats may result in invasion of alien animal species and vermin which will compete with rare and endangered animals.</p>
<i>Issue 8: Disruption to faunal movements</i>	<p>Impact 1: The construction of roads and trails will impact on animal movements and increase road kills</p> <p>Impact 2: Habitat fragmentation can lead to secondary effects resulting from disruption of animal movements.</p>
<i>Issue 9: Presence, introduction and spread of alien animals</i>	<p>Impact 1: Increase in alien animal species and vermin</p>
<i>Issue 10: Increased fire risk</i>	<p>Impact 1: Increase fires could lead to loss of habitats</p> <p>Impact 2: Increase fires could lead to loss of animal species</p>
<i>Issue 11: Noise and light pollution</i>	<p>Impact 1: Vehicle traffic is noisy and at night also involves considerable light pollution and also lighting in compounds which could depress local populations of sensitive birds and large mammals.</p>
<i>Issue 12: Ecosystem disruption</i>	<p>Impact 1: The estate and road networks can have numerous direct and indirect effects on ecosystem functioning, particularly in some sensitive vegetation types</p>

### ***3.2 Assessment of the significance of key issues and impacts***

The general approach to the identification and assessment of impacts as outlined in the Impact Assessment Guidelines (RSB-GUI-01-002-01) must be adopted. The discussion of the impacts should be specific rather than general and must apply the impact significance rating scale adopted for the impact assessment process. The impact rating scale used must be the same as that used by all the other specialists. The impacts of the construction and operational stages of the proposed project need to be identified and assessed, as do the impacts of the project alternatives. The significance of the impacts also needs to be rated for the before and after mitigation scenarios.

The following should also be considered:

- It is important to seek input from local communities and other I&APs who may have extensive knowledge of local baseline conditions;
- The IA practitioner must ensure that the specialist(s) are appropriately experienced and sufficiently knowledgeable about local conditions, the proposed development and assessment techniques to provide an accurate and defensible assessment of the potential ecological impacts.

## 4. Mitigation and monitoring

### 4.1 Mitigation Measures

It is not possible to anticipate the possible mitigation measures needed as these will depend on the nature and extent of the impacts, the local context and the practical constraints. The mitigation measures recommended for each impact need to be practical and effective in:

- eliminating the impact,
- reducing/increasing either the temporal or spatial scale of the impact,
- reducing its severity
- reducing the risk of the impact by reducing its likelihood of occurring.

The impact rating table needs to indicate how the mitigation measure will change one or more of these rating factors. For negative impacts the mitigation measures should reduce the significance levels, but for beneficial impacts the mitigation measures should enhance the benefits. Usually the mitigation measures will be specific to an individual impact, but sometimes they will be relevant to all the impacts that fall under a specific issue (i.e. governance).

There are a number of general mitigating factors with respect to the natural environment, biodiversity and areas with conservation value(s) of local, regional or global importance that can be identified here, and easily be introduced. These are aspects that should be considered early in the proposed introduction of biofuel crops.

Issues and Impacts (as discussed in Table 1, above)	Mitigation measures
<i>1. loss of indigenous vegetation, endangered plant species and loss of sensitive animal habitats</i>	<ul style="list-style-type: none"> <li>• Siting of the estate should be planned in already modified and disturbed sites such as pastures and, cultivated fields and fallow lands, where invasive or weedy species are likely to dominate, and woody vegetation has been cleared.</li> <li>• A series of corridors within the estate should be created to protect the indigenous vegetation.</li> <li>• The area must be thoroughly searched by a botanist prior to construction to identify any protected species, species of special concern or important vegetation types and habitats. Any endemic species could be removed from the site and re-located to other suitable areas.</li> <li>• Educate workers and visitors about the protected plants of the area to avoid disturbance to the natural vegetation</li> </ul>
<i>3. Introduction and spread of alien plant species</i>	<ul style="list-style-type: none"> <li>• Remove existing and new alien vegetation immediately.</li> <li>• Educate workers and visitors regarding alien vegetation identification and management.</li> </ul>
<i>4. Loss of faunal diversity and animal species of special concern</i>	<ul style="list-style-type: none"> <li>• Retain ecological corridors within the estate to allow for the migration and protection of the fauna..</li> <li>• Establish wide, natural drainage area within planted areas in preference to narrow drains with hard surfaces.</li> </ul>

Issues and Impacts (as discussed in Table 1, above)	Mitigation measures
	<ul style="list-style-type: none"> <li>• Ensure adequate buffers around areas of HCV.</li> <li>• Minimise vegetation clearing as far as possible through careful estate planning, by including ecological input.</li> <li>• Roads should only be established in areas designated as not sensitive.</li> <li>• Educate workers and visitors to not disturb the wild animals.</li> </ul>
<i>5. Disruption to faunal movements</i>	<ul style="list-style-type: none"> <li>• As above</li> </ul>
<i>6. Introduction and spread of alien animals</i>	<ul style="list-style-type: none"> <li>• Remove any alien fauna immediately.</li> <li>• Educate workers regarding alien animal identification and eradication.</li> </ul>
<i>7. Increased fire risk</i>	<ul style="list-style-type: none"> <li>• Remove any source of fire hazards.</li> <li>• Educate workers regarding fire and fire management.</li> </ul>
<i>8. Noise and light pollution</i>	<ul style="list-style-type: none"> <li>• Control the traffic at night</li> <li>• Limit the amount of lights, especially in remote areas</li> </ul>
<i>9. Ecosystem disruption</i>	<ul style="list-style-type: none"> <li>• Confine development to specific regions.</li> <li>• Keep development away from wetlands and other sensitive areas.</li> </ul>

#### ***4.2 An Ongoing Monitoring Programme***

Given that the impact assessment process and Environmental and Social Management Plan (ESMP) will be used by the RSB to award and assess accreditation for biofuel developments, it will be necessary for the ESMP to include a Monitoring Plan that will facilitate ongoing assessment of the impact of the biofuel development. Consequently, the Social Expert needs to develop some recommendations with respect to what indicators should be monitored, when, by whom and how. These recommendations should be sufficiently detailed to allow the responsible persons to be able to collect the data, analyse it and use it to assess project performance.

It is important that as soon as the project is initiated a monitoring programme is initiated so as to detect the following types of changes in the natural ecosystems and conservation values:

- Alien invasive plants: the abundance of the aliens must be monitored from repeat surveys and they should be eradicated immediately.
- Overall Vegetation Changes: general changes to the vegetation and habitats should be monitored.
- Vegetation change and natural succession: any changes to the vegetation should be noted on an annual basis.

**Monitoring** should be ongoing for the life of the project.

### 4.3 Contents of a specialist report

Each of the specialist reports should follow that same structure and format. A suggested structure for the Conservation Impact Assessment Report is as follows:

#	Section Title	Contents
1	Summary	This should provide a summary of the specialist study including the impacts, conclusions and recommendations.
2	Introduction	The introduction should provide brief background information, the terms of reference for the study, and the study team. An overview of the legislative framework, including applicable international agreements and conventions, national Acts, and sub-national laws and regulations of relevance to the management and conservation of the ecosystems of the area.
	Project Description	An overview of the proposed development, including details of the agricultural, industrial and auxiliary components as well as the nature and extent of persons to be employed on the project, and any social development components.
3	Methodology	This section should indicate what data sources and research methods were used as well as the methods of data analysis.
4	Description of the Natural Environment	A description of the local bio-physical and ecological systems, with a focus on the nature of biodiversity (e.g. endemism, rare, threatened or endangered species), natural ecosystems and High Conservation Value areas, buffer zones, ecological corridors. Maps showing the location of project elements such as vegetation and habitats, species distributions, migration pathways, etc as relevant to each particular study
5	Impact Assessment and Mitigation Measures	This section should form the bulk of the report. It should identify and discuss each of the individual impacts to the natural ecosystems and the biota, and use the impact ratings method to rate their significance before and after mitigation, as well as during the construction, operational and decommissioning phases of the project. For each impact, the recommended mitigation measures needed in order to reduce the negative impacts and enhance the positive impacts associated with the proposed development should be discussed. Attention should be drawn to any very high and irreversible impacts that cannot be mitigated as these may be fatal flaws that prevent the project from going ahead and detailed justification for such a significance rating will need to be provided.
6	Monitoring Recommendations	This section should identify the key indicators that should be monitored over time and the methods that should be employed to monitor them.
7	Conclusion	This should provide a summary of the context and impacts.
8	Recommendation	The recommendations should focus on the suggested mitigation measures.
9	References	A list of all the references and sources
10	Appendices	This should include key sources of data/results that informed the study, lists

		of all the vegetation and habitat types with lists of the dominant species, lists of species and those of special concern such as endemics, rare and endangered species, etc.
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**4.4 References**

IFC, 2007a. Environmental, Health and Safety Guidelines for Plantation Crop Production.  
Available at: [www.ifc.org/ifcext/enviro.nsf/Content/EnvironmentalGuidelines](http://www.ifc.org/ifcext/enviro.nsf/Content/EnvironmentalGuidelines)

## ***Annex I - Issues and impacts to consider during a Rapid Assessment***

As determined during the screening, under certain circumstances it may be appropriate to conduct a Rapid Environmental and Social Assessment (RESA) rather than a full ESIA. Under such circumstances, the level of detail required is normally limited. Key issues related to the natural environment and conservation values that should be considered are listed in checklist below.

<b>Screening Questions</b>	<b>Yes</b>	<b>No</b>	<b>Remarks</b>
Will the Project cause...			
i. Unacceptable loss in biodiversity?			
ii. Unnecessary loss of ecological value and decreased biodiversity by replacement of natural vegetation with a plantation?			
iii. Ecological problems due to land clearance prior to planting (e.g., soil erosion, disruption of hydrological cycle, loss of nutrients, decline in soil fertility)?			
iv. Impairment of ecological opportunities?			
v. Impairment of beneficial uses of traditional forests?			
vi. Possible conflicts with existing and established management policies?			
vii. Loss of ecological and economic functions			
viii. due to any construction of social infrastructure (e.g.,			
ix. road, training or information centre, office or housing)?			
x. Reduction of the access of local people to fores resources?			
xi. Uncontrolled in-migration of people into the area due to opening new roads to wooded areas and further degradation and loss of natural resources (due to increased pressure on existing social infrastructure – secondary impact)?			
xii. Other ecological problems (e.g., pollution of water bodies from fertilizers, pesticides, and herbicides used in the plantation)?			
xiii. Loss of areas suitable for protecting biodiversity, e.g. Forests, centres of endemism or hotspots			
xiv. Loss of unique or extremely diverse habitats with special habitat features			

If the answer to more than two of the above questions is yes, then it is likely that an ESIA will be required, supported by a more detailed ecological study.