CALIFORNIA, ACRE AND CHIAPAS

PARTNERING TO REDUCE EMISSIONS FROM TROPICAL DEFORESTATION

Recommendations to Conserve Tropical Rainforests, Protect Local Communities and Reduce State-Wide Greenhouse Gas Emissions

THE **REDD OFFSET WORKING** GROUP

THE **REDD OFFSET WORKING** GROUP (ROW)

The REDD (reduced emissions from deforestation and forest degradation) Offset Working Group was established in February 2011 as a result of a memorandum of understanding signed in November of 2010 between the Governors of California, Chiapas and Acre as part of a collaborative effort to reduce emissions from global deforestation and degradation. Deforestation and forest degradation account for approximately 15% of the world's annual greenhouse gas (GHG) emissions. Comprehensive efforts to constrain the impacts of climate change will require efforts to reduce GHG emissions from deforestation and forest degradation.

Based on direction in the MOU, a REDD Offset Working Group (ROW) was created that includes state representatives and technical experts, who serve in their personal capacities. With input from stakeholders, and through an open process, the ROW is examining three central questions: (1) what legal and institutional mechanisms are required to enable California to recognize international REDD-based emission offsets for compliance purposes; (2) what are the key policy considerations a sectoral REDD program should address to achieve the level of performance needed for California to recognize the REDD-based offsets for compliance purposes; and (3) what should be the bases for judging the performance of the states in reducing carbon removals from forests?

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The ROW is led by the Green Technology Leadership Group, a non-profit organization focused on bridging science, policy and business concerns in developing new and innovative programs that can be utilized today. For more information visit www.greentechleadership.org.

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SUMMARY FOR POLICYMAKERS

Tropical forests play a part in all of our lives wherever we live by providing medicines and other forest products, clean air and water, climate benefits at multiple scales, habitat for half of the world's plant and animal species, home to thousands of indigenous peoples' cultures, livelihoods to millions of people, and a vast reservoir for sequestering carbon dioxide. These forests have declined rapidly in recent decades as a result of agricultural expansion, unsustainable logging, forest fires and other activities. Deforestation now accounts for 15% of all global greenhouse gas (GHG) emissions—more than the entire global transportation sector and second only to the energy sector.

The international community has been trying to reduce tropical deforestation for decades, but success has so far been elusive. Since 2005, under the auspices of the United Nations Framework Convention on Climate Change (UNFCCC), a new mechanism has been under development that would compensate tropical forest countries for progress in reducing deforestation. Known as REDD+ ("REDD" stands for *R*educing *E*missions from *D*eforestation and forest *D*egradation; the "+" stands for enhancement of forest carbon stocks), this initiative has made significant progress in the last eight years on a range of important issues, but is ultimately hostage to the larger effort of establishing a new international climate treaty.

In 2010, California, the Brazilian State of Acre, and the Mexican State of Chiapas signed a Memorandum of Understanding (MOU) to cooperate on the technical, legal, and institutional design issues associated with the effort to link jurisdictional REDD+ programs with California's cap-and-trade program, bypassing the UNFCCC gridlock. Each of these three states brings an important set of experiences and capabilities to this effort.

Deforestation now accounts for 15% of all global greenhouse gas (GHG) emissions—more than the entire global transportation sector and second only to the energy sector

Since 2006, California has been developing a state-wide program to reduce GHG emissions from all sectors of its economy. As part of that effort and in recognition of the fact that climate change is a global problem, California has actively pursued partnerships and linkages with other jurisdictions (foreign and domestic). Thus, in its cap-and-trade regulations, California expressly contemplates linking its cap-and-trade program with other subnational cap-and-trade programs, including its anticipated linkage with Quebec. California's cap-and-trade regulations also include provisions that allow for the possibility of international sector-based offsets as part of the broader offsets program, and specifically identify REDD+ as the first such sector for consideration.

International sector-based offsets are quite different than the stand-alone project-based model that California is pursuing with its domestic offsets program. Sector-based offsets are tied to reductions that are achieved across an entire sector or jurisdiction. In this regard, *jurisdictional* REDD+ programs, where the state or province develops policies and frameworks to reduce emissions from deforestation across the whole jurisdiction, are similar to the effort that California is undertaking under AB 32 to reduce emissions from all sectors across its entire jurisdiction. Under this system, individual REDD+ projects, such as those that are common in the voluntary markets, would have to be incorporated in and accounted for under the state or provincial REDD+ program in order to be eligible to receive offset credits. These sorts of jurisdictional programs have the potential to generate emissions reductions at much larger scale and lower cost than the traditional project-based model.

It is precisely this jurisdictional approach to REDD+ that Acre and Chiapas are developing. Acre has been developing REDD+ as the capstone of its forest-based rural development strategy, including a wall-to-wall land-use zoning system that carries the force of the law, and policies and programs designed to increase the value of sustainably harvested forest products. Beginning in 2008, the state embarked upon an extensive multi-stakeholder consultation process culminating in December 2009, in an innovative state-wide legal and institutional framework for creating incentives for environmental services with forest

carbon as a centerpiece. Today, Acre is poised to link its program with multiple pay-for-performance opportunities.

Like Acre, Chiapas has been developing a state-wide approach to REDD+, but it is at an earlier stage than Acre. Chiapas is identifying and beginning to assimilate the substantive and procedural elements needed to build a successful jurisdictional REDD+ program that will work within the Mexican context. It also brings an important set of experiences regarding land tenure, indigenous rights, and participation, highlighting the critical importance of establishing a process that incorporates all stakeholders from the beginning in designing and building jurisdictional programs for REDD+ and low emissions development.

The MOU between California, Acre, and Chiapas represents a historic opportunity to strengthen jurisdictional REDD+ programs, securing and deepening the substantial progress that has already been made in lowering carbon dioxide emissions to the atmosphere associated with tropical deforestation. In Brazil alone, states of the Governor's Climate and Forest Task Force (GCF) with support from the federal government have reduced deforestation to 24% of the ten-year average ending in 2005, representing a cumulative reduction in emissions to the atmosphere equivalent to 3.5 billion tons of carbon dioxide ($GtCO_2e$). In 2012, the decline in Amazon deforestation represented a 1.8% reduction in global carbon dioxide emissions to the atmosphere from all anthropogenic sources. This important progress is part of a larger transition to low emission economies in which state and national policies, finance institutions, civil society, farm sectors, and other private sector actors are becoming aligned to produce more, alleviate poverty, maintain and restore natural ecosystems, and improve livelihoods while emitting fewer GHGs.

California's cap-and-trade program, adopted pursuant to the Global Warming Solutions Act of 2006 (AB 32), is the only GHG compliance program today that could provide positive incentives to these nascent jurisdictional REDD+ programs through its international sector-based offsets provisions. Although such provisions, if adopted, would represent, at most, 2% (first compliance period) to 4% (second and third compliance periods) of total compliance obligations under the cap-and-trade program, their successful implementation could greatly multiply the global impact of AB 32 by sending a signal to other states that their hard work and political leadership in mitigating climate change will be recognized and rewarded and by providing a critical learning opportunity for other emerging cap-and-trade programs as they consider whether to adopt similar provisions for REDD+. Given the significant fragmentation of climate policy, this sort of innovative, bottom-up approach that endeavors to link emerging GHG mitigation efforts throughout the world represents an important path forward in the effort to achieve a truly global approach to the problem of climate change. In the absence of such leadership, the progress made in slowing tropical deforestation could be lost as the viability of an international mechanism for REDD+ recedes further into the future and political support within tropical states dissipates.

KEY ISSUES AND DRAFT RECOMMENDATIONS

In 2011, the three MOU states (Acre, California, and Chiapas) asked a group of experts, constituted as the REDD Offsets Working Group (ROW), to develop a set of recommendations regarding the design of compliance-grade jurisdictional REDD+ programs and options for linking these programs with the California system. This draft report is the result of the ROW's efforts over the last two years, and it addresses three main issues: (a) the key elements of compliance-grade jurisdictional REDD+ programs; (b) the corresponding requirements that California (or some other cap-and-trade program) would need to adopt in its regulations in order to accept offsets from jurisdictional REDD+ programs; and (c) the legal frameworks and linkage options for connecting jurisdictional REDD+ programs with a cap-and-trade program such as that being developed in California.

Each of the three MOU states will have to decide whether and how they want to use these recommendations if they decide to move forward with this initiative. It is important to point out, moreover, that although these recommendations were developed in part based on the specific experiences of these three MOU states, they are not intended to be exclusive to these jurisdictions.

What does it mean to focus on sector-wide, jurisdictional REDD+? California's decision to leave open the possibility for *sector-wide* REDD+ offsets within its cap-and-trade program has important implications for all of the recommendations described in this report. Sector-wide, jurisdictional REDD+ programs, referred to in this report as *Jurisdictional* REDD+, are designed to operate across entire nations, states or provinces, covering and entire sector of emissions; in this case, forests. Jurisdictional REDD+ programs seek large-scale changes in the rural development model through policy alignment, institutional innovation, and through mechanisms for attracting private sector investors and project developers. Individual projects could be brought under the broader umbrella of the jurisdictional REDD+ program development process and accounting frameworks.

Jurisdictional approaches to REDD+ have important advantages over project-level approaches in ensuring the environmental integrity of offsets that might enter California's cap-and-trade system. By defining performance across the entire jurisdiction for the two main types of emissions (forest conversion to lower-carbon land uses such as crops and pasture, and forest degradation through forest fires, logging, and other human-induced activities), risks of performance reversal and leakage at the project level can be absorbed into state-wide performance and accounting, appropriately directing attention to the large-scale changes in the rural development model that are the essential foundation of permanent emissions reductions. Many tropical states are already demonstrating that it is possible to greatly reduce emissions from deforestation and forest degradation while increasing production of crops, livestock and timber through effective alignment of policies, law enforcement, and infrastructure. In other words, jurisdictional REDD+ is closely analogous to cap-and-trade programs aimed at reducing emissions from fossil fuels in that they are achieving permanent changes in land-use systems that greatly reduce deforestation, forest degradation, and associated emissions.

Jurisdictional REDD+ programs seek large-scale changes in the rural development model through policy alignment, institutional innovation, and through mechanisms for attracting private sector investors and project developers

1. Determining the Scope of REDD+: Policy makers must consider the types of forest carbon emissions and atmospheric removals that will be required and/or allowed as offsets, and the timing by which each type of emission/removal should be included, and ultimately credited, in a cap-and-trade program. Forest carbon programs can reduce atmospheric carbon by lowering emissions from deforestation and/or forest degradation, or by removing carbon from the atmosphere through the enhancement of carbon stocks (e.g., through forest restoration) in degraded forests or previously forested areas.

Recommendations: Partner Jurisdictions should account for emissions from deforestation and forest degradation (REDD) in their jurisdictional REDD+ programs, adding removals through carbon stock enhancement if and when it is deemed appropriate by both California and the partner jurisdiction. Comprehensively accounting for both deforestation and degradation at the outset increases the atmospheric integrity of the system. For its part, California should initially focus its sector-wide international offset system on emissions reductions from deforestation and forest degradation and be ready to include carbon stock enhancement as Partner Jurisdictions develop robust monitoring.

2. Reference Levels, Additionality and Own Effort: The integrity of REDD+ as an international offset within California will depend upon jurisdiction-wide accounting of emissions and on the *additionality* of the reductions and removals that are achieved by the jurisdictional REDD+ program. The reduction of emissions or the increase of removals achieved by a Partner Jurisdiction are additional if they would not have occurred in the absence of the REDD+ program. The key instrument for assessing additionality is the emissions Reference Level (RL), which is the best estimate of future forest carbon emissions and removals of a Partner Jurisdiction in the absence of the REDD+ program. Measured emissions that fall below the RL, and measured removals that fall above the RL, are considered additional. Partner Jurisdictions should also demonstrate their "own effort" in achieving part of these reductions to increase the contribution of the offset program to climate change mitigation.

Recommendations: Reference levels (RL) should be established at the beginning of the program, with the Partner Jurisdiction choosing a ten-year reference period between 1995-2010, and taking an average of the of the annual emissions from that period using the best available data. Under certain circumstances, the RL may be adjusted from the historical average to account for rigorously-justified state-specific circumstances. In addition, jurisdictions should demonstrate their own effort at reducing emissions by reducing GHGs beyond what is credited within California's cap-and-trade program. Alternatively, a Partner Jurisdiction may demonstrate its own effort at reducing emissions through progress already made in achieved emissions reductions that is not compensated through a pay-for-performance mechanism. In any case, own effort reductions should be measured and reported.

3. *REDD+ Architecture:* Architecture refers to the key elements

any Partner Jurisdiction should address in designing a compliance-grade REDD+ program that could generate emissions reductions capable of being recognized in a cap-and-trade program such as the one being developed in California.

a. *Crediting Pathways and Nested Crediting:* Crediting for REDD+ offsets will require a clearly defined pathway and set of responsibilities to navigate the legal and quality control issues that surround such offsets. REDD+ regulations will need to specify who will issue REDD+ credits or allowances, to whom, and how those credits will be issued, registered, and tracked. Clarifying the crediting pathway is important because it can affect the design of REDD+ programs and any provisions in a cap-and-trade program that would allow offsets for emissions reductions achieved under such a program.

Recommendations: California should recognize credits issued by Partner Jurisdictions or approved third-party programs that meet California's requirements. Such recognized credits would then be eligible for conversion into California compliance instruments. Jurisdictions should decide what will be eligible for crediting (state-wide efforts only, nested projects only, or both scales of policies and measures). Where nested projects may be credited, the REDD+ program should clearly specify how atmospheric integrity will be maintained if projects achieve emissions reductions but the jurisdiction does not, since performance and credit issuance in the REDD+ program, in these recommendations, are ultimately assessed at the jurisdictional level.

b. *Registry Infrastructure:* Registries are an important part of the infrastructure necessary to support any trading system for reducing GHG emissions. A registry is essentially a database used to track information necessary to ensure that regulated entities comply with the requirements of a cap-and-trade system. The basic function of an emissions trading registry is to track the allocation and transfer of tradable compliance units (i.e., allowances, credits, or permits) among regulated entities. Regarding offsets, a database must be maintained containing information on verified jurisdictional GHG reductions and/or removals , and where nested projects are involved, descriptive project details (project type, location, name, size, etc.) as well as monitoring data and verification reports. Systems are also needed to issue and track the transfer of offset credits (equivalent to allowance tracking systems).

PARTNER JURISDICTION CHECKLIST

- ☐ Jurisdictional accounting with a Reference Level based on a 10-year average of annual emissions chosen from between 1995-2010
- ☐ Measuring and monitoring both Deforestation and Forest Degradation, with uncertainty levels that meet California's minimum standards
- ☐ Functioning and comprehensive registry system for reporting and verifying forest carbon emissions and reductions
- ☐ Demonstrated voluntary effort in reducing emissions (un-credited emissions reductions)
- ☐ Framework for measuring and mitigating interstate leakage
- ☐ Mechanism(s) for managing performance reversals
- ☐ Legal infrastructure to clarify what entities can own emissions reductions
- ☐ Strong social and environmental safeguards that meet global best-practice standards, including a robust grievance mechanism

Recommendations: Partner jurisdictions should be responsible for designing and establishing their own carbon accounting and registry systems that meet these criteria, unless the jurisdictional program is comprehensively managed within a national registry that meets the above criteria The Administrator should work with Partner Jurisdictions to establish minimum operating standards and security procedures for REDD+ registries in order to ensure the integrity of the Administrator's offset market. These standards and security procedures should be periodically reviewed and evaluated, and registry administrators should be regularly audited to ensure that standards and procedures are consistently and effectively applied.

c. State-level accounting: Emissions reductions and increased removals that are credited within a REDD+ program must be above and beyond what would have happened in the absence of the REDD+ program to ensure the atmospheric integrity of any cap-and-trade program that uses offsets. Transparent state-level accounting systems must be established to ensure the overall integrity of these reductions and removals and, where relevant, to control for leakage, reversals, and double-counting. For nested projects, accounting will also need to occur at the project level to ensure environmental integrity and for purposes of reconciling project level performance with jurisdictional performance.

i. Leakage: Leakage refers to any net increase in GHG emissions (or reductions in atmospheric removals) occurring outside of the REDD+ program or nested projects as a result of the REDD+ policies and measures that are implemented. The risk of leakage is lowest for REDD+ programs that reduce deforestation while increasing production on already-cleared land of the crops and livestock that drive deforestation; similarly the risk of leakage is lowest for programs that reduce forest degradation while increasing production of timber through reduced impact forest management or tree planting.

Recommendations: Jurisdictions should establish robust frameworks and mechanisms for managing and mitigating potential displacements and for detecting and accounting for any residual leakage beyond state borders. Partner Jurisdictions should demonstrate that drivers, agents and causes of deforestation are directly addressed by the jurisdictional program within the state/province boundaries. Where economically relevant, California should recommend that Partner Jurisdictions reduce the risk of leakage by demonstrating production of crops and livestock at a business-as-usual rate as they lower deforestation and forest degradation.

ii. Reversals: California's decision to focus its REDD+ offset provisions on sector-wide systems brings with it many advantages for achieving robust emissions reductions with a low likelihood of performance reversals, which could occur if emissions rose above state-wide reference levels at some point in the future (including over the long run). First, on the scale front, increases in emissions in one location may be made up by greater emissions reductions achieved elsewhere in the state. Second, crediting to Partner Jurisdictions is based on state-wide emissions reductions that require policy reform, law enforcement, and changes in the rural development model that address the underlying causes of both deforestation and degradation (incl. logging and fire). These advantages greatly reduce the reversal risk associated with jurisdictional REDD+ programs compared to project-only approaches. From time to time, forests may be affected by major natural disturbances (e.g., droughts or hurricanes) that affect wide areas. Carbon accounting for these kinds of disturbances may be managed in different ways including through reference level adjustments under certain circumstances and/or using buffer pools to compensate for losses.

Recommendations: Partner Jurisdictions should develop and adopt mechanisms for robustly and fairly managing performance reversal risk. Emissions from major natural disturbances should be addressed in ways that ensure atmospheric integrity without unfairly penalizing Partner Jurisdictions or affected projects.

iii. Double Counting: Double counting of GHG emission reductions occurs when credits are given more than once for the same reduction. There are three types of double counting that

may be a concern for sub-national REDD+ programs: Crediting REDD+ emission reductions that are also being credited under separate voluntary or regulatory offset programs; crediting sub-national REDD+ emission reductions that are also being credited under a national REDD+ program or initiative; and issuing credits to more than one entity for the same emission reductions within a sub-national REDD+ program, e.g., to both the jurisdiction and a nested project.

Recommendations: Partner jurisdictions should clarify, through laws or regulations, which entities may legally claim ownership of REDD+ emission reductions or removals and work closely with national government agencies to ensure that their programs are recognized and properly integrated with national efforts, if and when the national program is at a sufficiently advanced stage to enable integration. In the case that the national program is not yet in a position to integrate the jurisdictional program, it is recommended that the jurisdiction receive a letter of non-objection from the national government, to demonstrate awareness of the jurisdictional program, and eliminate the possibility of future double-counting. Furthermore, Partner Jurisdictions allowing the crediting of nested projects must establish integrated accounting frameworks to ensure there is no double counting.

d. Measurement, Monitoring, Reporting and Verification (MMRV): An important element in any strategy to reduce GHG emissions is a MMRV system that ensures all parties involved are only credited for the actual emissions reductions they achieve. MMRV systems include collecting necessary data for quantifying and tracking changes in GHG emissions; providing accurate, regular, and reliable assessments of GHG emissions and relevant policies and measures; and verifying reports as accurate and comprehensive.

Recommendations: Rigorous measuring and monitoring should be ensured by establishing a sliding scale discount, whereby higher levels of measurement uncertainty would result in fewer emission reductions being credited, thus providing a strong impetus for improvements in measurement and monitoring. An uncertainty threshold, based on what California considers acceptable, could be established above which no credits would be issued.

Validation of each jurisdiction's methodology for measuring and reporting should occur at the outset of the program, and periodically thereafter. As part of the jurisdiction's methodology for measuring and reporting, independent, third-party verification of GHG reductions should occur as a precondition of crediting and at intervals of no more than five years thereafter. Verification would be conducted according to the methodology outlined in the validation at the start of the program. MMRV for nested projects should be comparable with jurisdiction-wide MMRV.

e. Development and Recognition of Safeguards: Environmental and social safeguards have moved in recent years from the periphery to the center of the debate on REDD+. The enhanced attention to safeguards stems from the strengthening empirical case that clear land rights and secure resource tenure, effective consultation processes, the development of progress indicators relevant to local needs, and the availability of a grievance mechanism are necessary pre-conditions for the ultimate success of REDD+ programs.

Recommendations: California should condition the acceptance of any REDD+ offsets on demonstration by partner jurisdictions that their respective REDD+ programs include strong social and environmental safeguards that meet best-practice global standards. REDD+ programs should establish and implement social and environmental safeguards to ensure that carbon emissions reductions are achieved in a manner that protects and enhances the rights and interests of local, forest-dependent communities (including indigenous peoples), supports rural livelihoods, and does not damage ecological systems. A basic premise is that Partner Jurisdictions should work to achieve high social and environmental integrity and performance by meeting the safeguards found in Annex 1 of the UNFCCC Cancun Agreement and emerging best-practice standards, in particular the REDD+ Social & Environmental Standards (SES). States should define their own benchmarks and performance indicators for implementing the REDD+ SES—including a transparent, public process for developing REDD+ policy measures—and monitor and

publicly report on them. Jurisdictions should develop adequate grievance mechanisms, and report on grievances received, and how they have been responded to and resolved, including any redress/remedy. Jurisdictions must also recognize and respect indigenous peoples' rights in any REDD+ programs.

Legal Frameworks and Linkage Options

Establishing provisions within the California cap-and-trade regulations to govern the acceptance of REDD+ offsets from foreign jurisdictions implicates a host of legal issues for California as well as for any foreign jurisdictions that might decide to link with the California system. In California, for example, new legislation requires the Governor to make certain "linkage findings" regarding program stringency and enforceability in any partner jurisdictions before any such linkage can proceed. Moreover, because Acre, California, and Chiapas all operate within larger federal systems of government, careful attention must be paid to federal statutory and constitutional constraints on any effort by these states to link their emerging GHG mitigation efforts. Thus, any linkage arrangement that operates as a binding agreement or resembles a treaty as understood under public international law would run afoul of constitutional provisions in Brazil, Mexico, and the United States that prohibit states from entering into such agreements. Any such linkage would also need to be constituted so as not to impinge upon exclusive federal authority over foreign affairs and international commerce in these countries. Because this is a relatively novel and dynamic area of the law, this document will need to be updated pending new legal developments. In Brazil, for example, the REDD+ Federal Program is currently under active debate. Likewise, California and Quebec are actively pursuing linkage of their cap-and-trade programs through the WCI. The outcome of these two processes (Brazil and California/Quebec) will likely have considerable relevance for linkage in the context of REDD+.

1. *Linkage Options:* Given the various legal constraints and pending new legal developments, the simplest path forward regarding linkage is a non-binding Memorandum-of-Understanding (MOU) between the relevant jurisdictions that provides for mutual recognition of the substantive elements, procedural requirements, and institutional design of REDD+ programs in Acre, Chiapas, and/or other partner jurisdictions on the one hand and the relevant California regulations regarding international sector-based REDD+ offsets on the other. The MOU would provide that the individual states (the parties to the MOU) would proceed with rulemakings in their respective jurisdictions to adopt the relevant regulations necessary to implement the various provisions identified in the MOU. Upon entry into force of the relevant regulations in each jurisdiction and appropriate verification, credits issued for verified emissions reductions under the relevant jurisdiction's REDD+ program (i.e., Acre's program) would be deemed eligible for conversion into California compliance instruments (offsets) for use by regulated entities in California. An alternative to this approach would involve "indirect" linkage through a third-party offsets provider or standards organization such as American Carbon Registry (ACR), Climate Action Reserve (CAR) or Verified Carbon Standard (VCS) or through an independent organization formed to facilitate such linkage such as WCI, Inc. This approach would likely also require some form of overarching MOU between the relevant jurisdictions to specify the conditions and requirements for eligibility, but each jurisdiction (e.g., California and Acre) would also engage directly with the relevant third-party organization.

Recommendations: California and its partner jurisdictions should avoid any sort of linkage arrangement that purports to operate as a "binding," treaty-like agreement as understood under public international law. To the extent possible, California and its partner jurisdictions should pursue linkage arrangements that are consistent with those that are being developed in the context of the WCI. California and its partner jurisdictions should consider adopting a non-binding MOU that provides for mutual recognition of the substantive elements, procedural requirements, and institutional design of REDD+ programs in partner jurisdictions on the one hand and the corresponding requirements for sector-based REDD+ offsets in California. The MOU should provide that the individual states (the parties to the MOU) would proceed with rulemakings in their respective jurisdictions to adopt the relevant

regulations necessary to implement the various provisions identified in the MOU. The adoption and implementation of such regulations should be verified by independent third parties.

2. *Enforceability:* All offsets accepted into the California compliance market are required by AB 32 to be "enforceable." The "linkage findings" that the Governor must make before any linkage can proceed also require specific findings regarding enforceability in any linked program. Any partner jurisdiction that is interested in linking its program with the California cap-and-trade system will therefore need to demonstrate the requisite level of enforceability under its program. Under its own domestic offsets program, California has also adopted certain liability provisions for invalidated offsets, some of which are problematic in the context of international offsets. Specifically, the current provisions regarding forest owner liability for invalidated offsets generated from domestic forest offset projects will not work in the international context, as California will be unable to enforce against foreign owners of forest land in foreign jurisdictions. But the general background liability rule for the California offsets program (what is sometimes referred to as buyer liability), under which regulated entities are liable for invalidated offsets that they have tendered for compliance, could serve, with some modifications and perhaps with the use of buffers as a first line of defense, to ensure the enforceability of international offsets from jurisdictional REDD+ programs. Under such a system, regulated entities will almost certainly need to find means to transfer such liability through contractual arrangements with the relevant REDD+ program (such as through an arrangement with the public/private company that will manage Acre's REDD+ program) or through insurance or other means.

***Recommendations*:** Partner jurisdictions interested in linking with California should enact relevant laws necessary to ensure that the domestic requirements of their jurisdictional REDD+ programs are enforceable in a manner sufficient to satisfy the enforceability requirements that are included in the "linkage findings" that must be made by the Governor of California before linkage can proceed. California should use its general buyer liability provision for offsets to further ensure enforceability of sector-based REDD+ offsets. Partner jurisdictions should consider innovative public and private institutions such as Acre's Company that are capable of entering into public and private commercial relations with credit buyers and assuming relevant liabilities.

Section 1: Introduction

1.1 Climate Change and Tropical Forests

Climate change is one of the greatest challenges facing humanity. There is broad scientific consensus that rising greenhouse gas (GHG) concentrations in the atmosphere will likely bring increasingly extreme weather events, sea level rise, forest diebacks, species extinctions, the retreat of glaciers and polar ice caps, and the collapse of important agricultural regions.[1] California will suffer as well. Extreme heat in urban centers, severe reductions in the Sierra snowpack, many more wildfires, and an increase in ozone pollution are just some of the effects that climate change will probably cause in the state.[2]

The amount of damage and suffering that climate change causes in California and globally will depend in large part upon our success in slowing global emissions of GHGs to the atmosphere. The United Nations established the Framework Convention on Climate Change (UNFCCC) in 1992 to develop international mechanisms for lowering GHG emissions. The UNFCCC has been implemented, initially, by way of the Kyoto Protocol through which several industrialized nations (although not the US) have adopted emissions reductions targets during an initial compliance period running from 2008 through 2012. These modest commitments were to be followed by a new international agreement involving deeper emissions reductions. Negotiations within the UNFCCC have failed to produce this more robust approach to climate change mitigation, however. Binding commitments to reduce emissions at the scale that will be needed to avoid dangerous climate change have now been pushed off until 2020 at the earliest.

One of the most advanced components of the elusive new international climate change treaty is a mechanism that would compensate tropical nations that succeed in substantially reducing their GHG emissions from forests. Through this mechanism, which is called "REDD+"[3], performance-based revenues would eventually flow to nations that (a) *reduce* their GHG emissions associated with *deforestation* (forest conversion to crops and pasture) and *forest degradation* (caused by logging and fire), and/or (b) *increase* their GHG removals from the atmosphere through *forest carbon enhancement* (e.g. tree planting, forest regeneration, forest restoration). Deforestation and forest degradation are concentrated in the Tropics (Figure 1.1) and represent 15% of global GHG emissions—more than all the world's cars, trucks, planes, ships, trains and buses combined.

Figure 1.1. Map of original area of tropical rainforests.

Many nations, states and provinces are not waiting for UNFCCC negotiations to finish, and are already moving forward in the design and implementation of REDD+ programs. Of particular interest are those programs that are *jurisdiction-wide*—that is, designed to operate across entire nations, states or provinces.

Jurisdictional REDD+ programs differ from the stand-alone forest carbon projects tied to voluntary markets that have been developed over the last decade or more to provide carbon-related incentives for such interventions as the retirement of timber concessions, tree planting, and the creation of new forest protected areas. These projects have been important laboratories of innovation, but have not provided emissions reductions at the scale that is needed. In contrast, jurisdictional REDD+ programs seek large-scale changes in the rural development model that intensify agricultural yields, re-direct agricultural expansion away from forests and onto lands that have already been cleared, improve the livelihoods of indigenous people and other economically-marginalized rural communities, strengthen and expand networks of forest protected areas, and improve the conservation of soils, water resources, and biodiversity. Jurisdictional REDD+ programs could potentially provide an efficient, pay-for-performance mechanism for helping to drive this transition to "low emission" rural development, achieving significant reductions in GHG emissions.

Jurisdictional REDD+ is advancing most rapidly within a novel alliance of 19 states and provinces that are working together as the Governors' Climate and Forests Task Force (GCF) (Figure 1.2). Launched in 2009 on the heels of an historic meeting of governors in Los Angeles, the GCF includes tropical states and provinces from Brazil, Indonesia, Mexico, Peru and Nigeria. More than one fifth of the world's tropical forests are found within GCF member states including more than three-fourths of the forests of the Brazilian Amazon region and half of the forests of Indonesia.

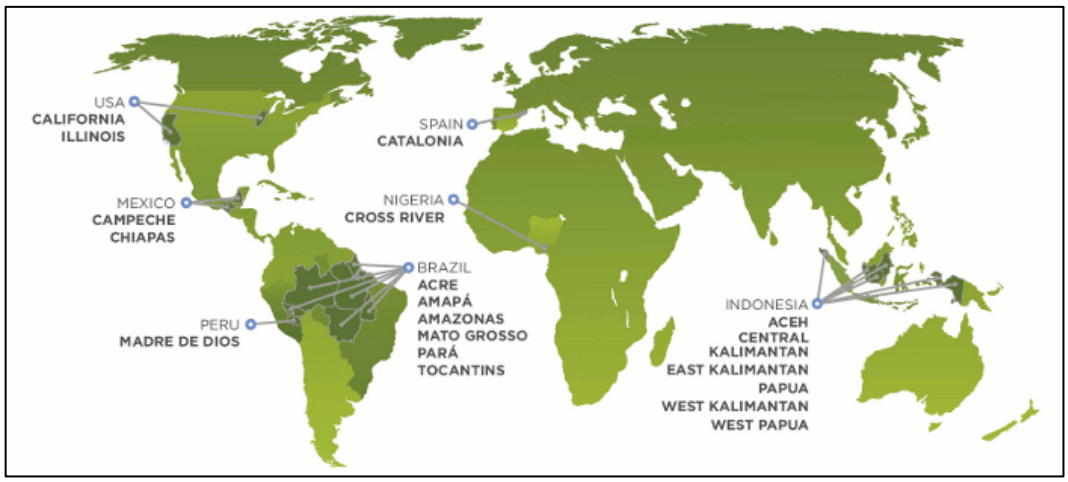

Figure 1.2. States and provinces of the Governors' Climate and Forests Task Force (GCF).

1.2 Progress Addressing Key Issues Facing REDD+

1.2.1 The core requirements of jurisdictional REDD+

Reducing deforestation and forest degradation across entire states and provinces is not a trivial task. Throughout history, forested nations of the world have logged and cleared the vast majority of their forest estates for timber and other forest products, to clear land for farming and livestock, and to provide homesteads to land-seeking farmers. Nations that still retain a substantial fraction of their old growth forests do so largely because these forests are inappropriate for conversion to agriculture or harvest for timber (the case for many of the boreal forests), or because the expanding frontier of resource extraction and agricultural expansion has not yet arrived (the case for many tropical forests). Forests are cleared or degraded as a consequence of global economic forces, including the demand for timber, pulpwood, beef, soybeans, and palm oil. The supermarket shelves of California have numerous products with ingredients grown on tropical forest soils. Conversion and degradation is also driven by local and regional economic and social forces, including markets for food staples and timber, and small-scale farmers seeking to carve

a living from the land. Slowing or eliminating deforestation while providing for economic development means addressing these underlying drivers while securing the conditions for continuing economic and social development.

Jurisdictional REDD+ programs are shifting the rural development model towards sustainable, forest-maintaining pathways that are lowering GHG emissions, improving rural livelihoods, and maintaining or restoring native ecosystems, biodiversity, soils and water systems. In a recent analysis of the progress of GCF states and provinces,[4] several key elements were identified as essential building blocks for successful jurisdictional REDD+. These include:

- Demonstrate emissions reductions across the jurisdiction
  - Establish a reference level and emission reduction target
  - Establish a reliable system for measuring, monitoring, reporting and validation
  - Design and implement a fast-track plan for reducing emissions
  - Harmonize national, state/provincial, and project-level emissions reductions

- Demonstrate social and economic benefits
  - Consult with full range of forest stakeholders
  - Identify the principle needs/demands of low-income or otherwise vulnerable groups
  - Design and implement programs for addressing needs and delivering benefits to vulnerable groups

- Demonstrate environmental benefits
  - Slow deforestation and forest degradation; speed forest regeneration and restoration; plant trees
  - Evaluate and open for consultation "risky" components of REDD+ programs (e.g. industrial tree plantations)

- Establish a legal and institutional framework for supporting the transition to low-emission rural development
- Attract financing
- Implement a system for tracking emissions reductions and offsets

Important progress has been made by GCF states towards achieving these elements, although no state has in place all of the building blocks. Several advances have taken place in recent years that are accelerating the development of implementation of jurisdictional REDD+ and overcoming obstacles, as described here.

1.2.2 Who will pay the bill?

Issue: The international community has a long track record of asking tropical nations to protect their forests without providing effective means for financing this protection.

Progress: There is a new sense of shared responsibility and urgency in both tropical and non-tropical forest countries to address the issue. Shared responsibility is necessary since demand for forest-related products is as close as our supermarket shelves, implicating all of us in the continued destruction of tropical forests. In addition to the UNFCCC and national (Norway, Germany, USA and others) commitments to REDD+ described above, the World Bank (through the Forest Carbon Partnership Facility) and UN-REDD (involving three United Nations agencies—the UN Development Program, the Food and Agriculture Organization, and the UN Environment Program) have been supporting REDD+ readiness activities in tropical forest countries to reduce deforestation. This near-term finance for REDD+ is providing important investments in REDD+ readiness with some pilot pay-for-performance finance mechanisms in operation, mostly through Norway. Robust performance-based REDD+ finance mechanisms are needed for 2015 and beyond.

1.2.3 Can we measure forest carbon emissions?

The Issue: If tropical nations and states are unable to accurately quantify emissions of forest carbon to the atmosphere, then there is no basis for establishing a pay-for-performance mechanism, such as the AB 32 offset provision.

Progress: Our ability to reliably monitor carbon emissions to the atmosphere associated with tropical deforestation and forest degradation has improved greatly in recent years. Such capabilities complement the general move toward state - and national-level forest carbon accounting frameworks, providing an essential part of the foundation for efforts to measure deforestation over large areas and relative to historical trends in a manner that is transparent and publicly available at low cost. Ground-level inventories are still needed to complement satellite- and airplane-based observations in order to translate changes in forest cover to carbon emissions. Collectively, these efforts now provide transparent methodologies to measure, monitor, report and verify that GHG reductions are occurring from reduced deforestation.

1.2.4 Will indigenous peoples and rural communities be negatively affected?

The Issue: Many strategies for fostering forest conservation in tropical states and nations have neglected to effectively engage indigenous and traditional peoples who live in these forests, or smallholder groups who are vulnerable to displacement.

Progress: There is a growing recognition around the world that efforts to link reduced deforestation in climate policy (at whatever level) will only succeed if local forest-dependent peoples and other stakeholders are included in the decision-making process and share in the benefits. Within the UNFCCC, in national programs, among donors, and at the project level, provisions to ensure protection of rights and interests of local communities, participation and consultation of forest-dependent communities and indigenous peoples in affected areas, and sharing of benefits with local stakeholders is being included. As a result, it is clear that any program linking climate policies, as proposed in this document, should develop and propose mechanisms for ensuring that such safeguards are implemented.

1.2.5 Can tropical nations and states succeed in lowering emissions from deforestation and forest degradation at scale?

The Issue: Is it possible for tropical nations to reduce their emissions of carbon from deforestation and forest degradation, given the poor track record of nations in controlling the expansion of their agricultural and timber frontiers into their forest estates?

Progress: Tropical national and subnational governments have already achieved significant reductions in GHG emissions by implementing policies and programs to reduce deforestation. The states and provinces of the GCF, for example, have already achieved globally significant reductions in GHGs by steeply lowering their rates of deforestation. In the GCF states of the Brazilian Amazon alone, deforestation has declined to 24% of its average for the ten-year period ending in 2005 (Figure 1.3). This remarkable decline was possible through a combination of policy interventions from both federal and state governments (e.g. suspending agricultural loan programs to farmers in counties with high levels of deforestation) and market interventions (e.g. moratoria against soy and beef produced on recently-cleared land). It is very significant, too, that this reduction in deforestation was achieved while continuing to expand the cattle herd and soy production—the two most important drivers of deforestation in the region (Figure 1.3). This has been possible through the intensification of beef production, allowing crop expansion to take place onto former pastures. The decline in deforestation GCF states of Brazil represents a 1.8% decline in global anthropogenic GHG emissions.

The historical achievement of the GCF states in Brazil and the significant strides that other GCF states have been making toward jurisdictional REDD+ are at risk. Delays in UNFCCC negotiations have diminished hope among political leaders, farmers, indigenous groups, and smallholder communities that there will ever be positive incentives at scale for the enormous transition in rural development models that is underway in the Amazon and elsewhere, and the climate mitigation that this transition is achieving.

The major source of funding today for governments that are embarking upon this transition is four billion dollars in interim REDD+ finance commitments that were made by Norway, Germany, the US, the UK, Japan, and other nations to provide a temporary bridge until an international finance mechanism is in place. For example, Norway alone has made a one billion dollar commitment of performance-based finance to both Brazil and Indonesia. As these nations succeed in lowering their deforestation, the money is disbursed. This finance has provided crucial funding for some GCF states in Brazil as they develop and begin to implement their jurisdictional REDD+ programs, but has yet to be disbursed in Indonesia and is insufficient to sustain the broader transition to low emission rural development.

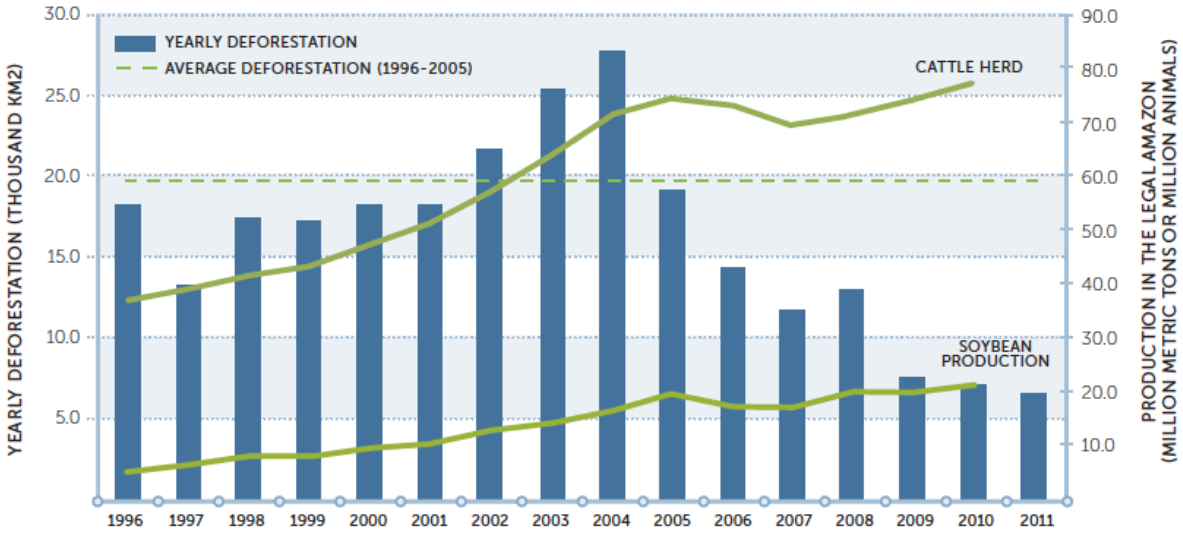

Figure 1.3. Annual deforestation, the size of the cattle herd, and soybean production in the GCF states of the Brazilian Amazon. As of July 2012, deforestation in these states had declined to 24% of the ten-year average ending in 2005, even as the cattle herd and soybean production continued to grow. This decline represents a 1.8% decline in global anthropogenic emissions, but has received few incentives from the international community. Note: this graph also includes Rondonia, which is not a GCF state.

1.3 REDD+ and California

It is in the context of these bold but fragile steps taken to achieve globally significant reductions in GHG emissions from deforestation and forest degradation that California is examining the possibility of linking its cap-and-trade program with jurisdictional REDD+ programs. As a founding member of the GCF and through its leadership in the Western Climate Initiative (WCI) and other processes, California has been at the forefront of global efforts to link GHG mitigation efforts throughout the world. This sort of bottom-up approach offers a critical path forward in the face of a deeply fragmented climate policy landscape.

In the case of REDD+, California has been working with its GCF partners and through the MOU with Acre and Chiapas to understand the challenges and opportunities of linking emerging jurisdictional REDD+ programs with its cap-and-trade system. To that effect, it has already adopted, as part of its existing cap-and-trade regulations, provisions that allow for the possibility of international sector-based offsets and specifically identify REDD+ as the first such sector for consideration. A decision by California to move forward with such provisions, elaborating them through additional regulations, would send a powerful signal given that California is the *only* GHG compliance system in the world today that is actively considering the inclusion of REDD+ in its program.

Although California's provisions for international sector-based offsets would only allow a total of approximately 100 million tons of CO_2 offsets during the first three compliance periods[5]—compared to more than 2 billion tons of CO_2 emissions reductions already achieved in the Brazilian Amazon alone (Figure 1.3)—its importance to REDD+ goes far beyond the potential volume. Rather, AB 32 represents a

concrete example of a policy that could deliver an injection of initial funding into REDD+ programs as it informs other REDD+ funding mechanisms under consideration in Japan, Australia, New Zealand, and elsewhere. California's decision on a REDD+ international offset mechanism will influence the decisions being made by several GCF governors today: does it make sense to continue to develop jurisdictional REDD+ programs? This report highlights recommendations for how the State of California in the United States, the State of Acre in Brazil and the State of Chiapas in Mexico can work to create a new framework for REDD.

1.4 Creation of the REDD Offset Working Group (ROW)

In 2010 a Memorandum of Understanding (MOU) was signed by the states of California, Chiapas and Acre to cooperate on conserving forest resources while reducing GHGs (see www.stateredd.org for MOU and background information). A key goal of all signatories was to link California's cap and trade compliance system with reduced deforestation efforts in Acre and Chiapas through the use of carbon offsets.

At the time of the signing, none of the states had internal capacity to assess how and when each state could link to the other's climate programs so they requested that a panel of experts help them. This panel, called the "REDD Offset Working Group" (ROW), was established with state representatives (as observers) and technical experts (who have served on the ROW as individuals, not as institutional representatives) to draft options and recommendations for the states to consider. This report is the culmination of two years of informal deliberations by this group to answer three basic questions:

1. What legal and institutional mechanisms are required to enable cap and trade programs like California to recognize international REDD-based offsets for compliance purposes?
2. What are the key policy considerations a REDD+ program should address to achieve the level of performance needed for California to recognize the REDD-based offsets for compliance purposes?
3. What should be the basis for judging the performance of the states in reducing carbon emissions from deforestation and forest degradation or increasing carbon removals by forests?

The ROW approached these questions grounded in core operating principles. Although the recommendations prepared by the ROW specifically targeted the REDD+ programs under development in Acre and Chiapas, the ROW considered as well the broader applicability of the recommendations to other states in the GCF and to other jurisdictional REDD+ programs under development outside of the GCF. The ROW also sought to maximize the compatibility of the recommendations with the agreements made on REDD+ within the UNFCCC without importing into the recommendations the aspects of these agreements that could be impede to progress of Acre, Chiapas, and the broader GCF to successfully develop and implement jurisdictional REDD+ programs that could provide globally significant reductions in GHG emissions. Finally, the ROW assumed that project-level REDD+ activities could be included in the recommendations, but only if nested into jurisdictional REDD+ programs.

It is important to emphasize that the recommendations in this report have not been formally endorsed by any single state. Each MOU state will have to decide whether and how it wants to use these recommendations and would need to follow official rule-making processes to formally adopt any of these recommendations.

1.5 Why California, Chiapas and Acre?

The states of California, Chiapas, and Acre are very different in terms of their overall size, economies, and political circumstances. Table 1.1 provides a brief snapshot of all three states for comparison. They are similar in having progressive political leadership that has taken action to reduce its GHG emissions through a host of innovative climate policies.

Table 1.1. Comparison of the Political Economy of Acre, California and Chiapas

	Acre	California	Chiapas
Map			
Size	58,912 sq mi	163,696 sq mi	28,297 sq mi
Population	732,793	38,041,430 (2012 est)	4,983,116
% of lands in forests	90%	30%	40%
Key climate policy	(Law 2.308: 2010) State System of Incentives for Environmental Services	(Assembly Bill 32: 2006) Global Warming Solutions Act	(2010) Climate Change Adaptation and Mitigation Law
Governor	Sebastião Afonso Viana Macedo Neves	Jerry Brown	Manuel Velasco Coello
Agency responsible for climate mitigation	Acre Regulatory Dep. of Environmental Services, Institute of Climate Change (IMC)	California Air Resources Board	Chiapas Secretariat for Environment, Housing and Natural History
Gross State Product	US$3.7 billion (2008)	US$1.960 billion (2011 est)	US$12.0 billion (2008)

California is important in linking the three states due to the scale of its economy (8th in the world if considered a country) and given its role in creating the world's first cap and trade program for reducing GHG emissions reductions that includes REDD+ as a possible source of international offsets. California adopted a state law in 2006 (the Global Warming Solutions Act) to reduce their GHG emissions to 1990 levels by 2020. Figure 1.4 below shows how California is using a mix of standards and regulations to promote the use of more renewable energy, low carbon fuels and clean cars.

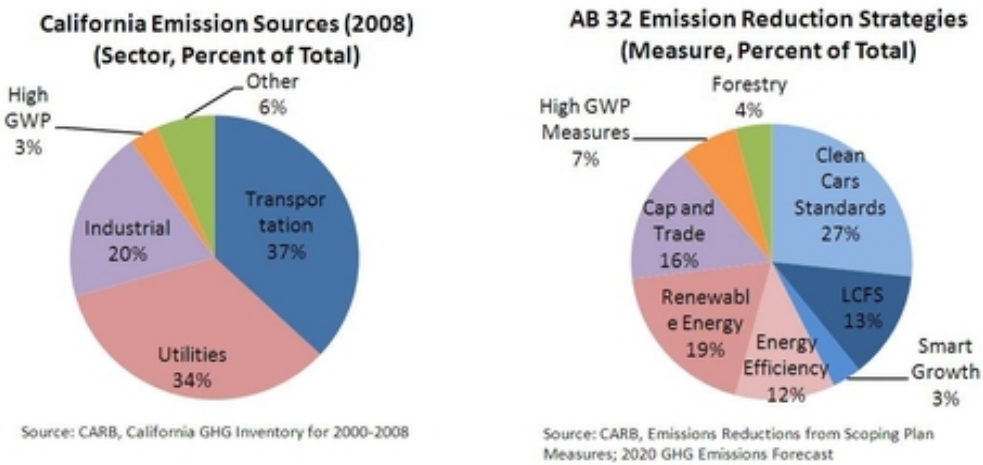

Figure 1.4: Total 2008 distribution of California GHG emissions & proposed California measures to reach AB 32 mandate. LCFS stands for Low Carbon Fuel Standard, and is intended to reduce CO_2 emissions by requiring the use of lower-carbon-intensity fuels. High GWP stands for measures undertaken to reduce high global warming potential gases, referring to a class of greenhouse gases that have a much greater impact per unit on climate change than CO_2 emissions.

California's cap and trade program covers all major sources of GHG emissions such as refineries, power plants, industrial facilities, and transportation fuels. Regulated entities have flexibility in the cap and trade program by choosing to reduce their own emissions, purchasing pollution allowances amongst other polluters or purchasing a restricted number of pollution reductions called "offsets" from entities outside of the capped sectors. As part of the offset regulations, California has included some general provisions for international sector-based offsets and has specifically identified REDD+ as the first such sector for consideration. These provisions would need to be elaborated with additional regulations and complemented with some specific requirements regarding linkage (see Section 3 below on Legal Frameworks and Linkage Options) before any such offsets could be accepted into the California cap-and-trade system. The current regulations (§ 95994) identify the following criteria for "sector-based offset crediting programs":

> (1) Sector Plan. The host jurisdiction has established a plan for reducing emissions from the sector.
>
> (2) Monitoring, Reporting, Verification, and Enforcement. The program includes a transparent system that regularly monitors, inventories, reports, verifies, and maintains accounting for emission reductions across the program's entire sector, as well as maintains enforcement capability over its reference activity producing credits.
>
> (3) Offset Criteria. The program has requirements to ensure that offset credits generated by the program are real, additional, quantifiable, permanent, verifiable and enforceable.
>
> (4) Sectoral Level Performance. The program includes a transparent system for determining and reporting when it meets or exceeds its crediting baseline(s), and evaluating the performance of the program's sector during each program's crediting period relative to the business as usual or other emissions reference level.
>
> (5) Public Participation and Participatory Management Mechanism. The program has established a means for public participation and consultation in the program design process.
>
> (6) Nested Approach. If applicable, the program includes:
>
> > (A) Offset project-specific requirements that establish methods to inventory, quantify, monitor, verify, enforce, and account for all project-level activities

(B) A system for reconciling offset project-based GHG reductions in sector-level accounting from the host jurisdiction.

As seen in figure 1.5 below, total projected demand for carbon offsets is estimated at around 203 million metric tons from 2013-2020 based on the regulation allowing capped entities to satisfy up to 8% of their total compliance obligation with offsets. Under the current regulations, international sector-based offsets, like those from REDD+, could provide 25% of this allowable percentage of offsets before 2015, and 50% after 2015, if approved by California. However, no international sector-based offsets can officially enter the California system until California officially approves a methodology or linking arrangement with a partner jurisdiction. There is currently no official international connection to California's cap and trade program, although there is a process underway to establish such an arrangement with the Province of Quebec as part of the Western Climate Initiative.

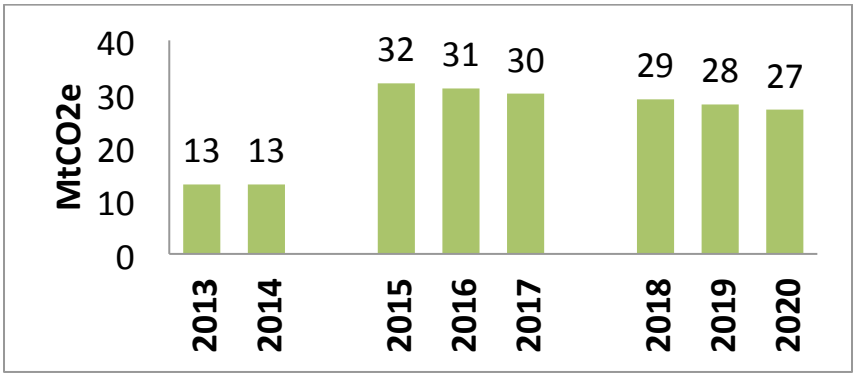

Figure 1.5: Total number of potential offsets that can be used in California's cap and trade program (Source: Winrock International/American Carbon Registry

Acre is an important partner in linking with California since it is one of the most advanced REDD+ programs in the world. In 2010, Acre enacted its landmark Law 2.308/2010, creating a State System of Incentives for Environmental Services (SISA), with REDD+ as the centerpiece. It provides an innovative, jurisdiction-wide approach to low-carbon rural development. The SISA establishes a set of principles, policies, institutions, and instruments for building an effective program for achieving environmental sustainability through ecosystem services incentives. It is designed to promote public-private initiatives to achieve the state's goals with respect to ecosystem services. Notably, Acre established its SISA law through in-depth consultation with local stakeholders and civil society, in compliance with national level REDD+ safeguards principles and criteria.

Chiapas is a key partner for linking due to its being the 8th largest state in Mexico with rich biodiversity in its rainforests covering over 40% of the total area of the state. As a result, 30% of the superficial water in the Mexico is contained in Chiapas and there are 47 Natural Protected Areas, which cover 19.8% of the total surface area of the state. In 2009, the state government started the Climate Change Action Program for the state of Chiapas (PACCCH), with the participation of many local and national actors. This effort generated an analysis of past deforestation and forest degradation in the state and a state greenhouse gas inventory. The institutional and legal framework for climate change mitigation and adaptation was created through the publishing of the Climate Change Adaptation and Mitigation Law which establishes the creation of a State Climate Change Commission, made up of 15 state government agencies, which is responsible for state government coordination in the development and implementation of the climate adaptation and mitigation policies, with the participation of the organized civil society.

Section 2: Design Options for REDD+ Implementation as an AB 32 Offset

This section outlines a series of recommended solutions to some of the key challenges involved in designing a jurisdictional REDD+ program capable of generating emissions reductions that could be recognized in cap-and-trade programs such as the one being developed in California**.** Issues covered are:

SCOPE
What types of REDD+ carbon emissions reductions and increased removals should be included in the program?

ADDITIONALITY, REFERENCE LEVELS AND CREDITING BASELINES
How will an emissions reference level be established against which emissions reductions and increased removals will be measured and credits will be issued? How can this be done in a manner to ensure additionality for purposes of a cap-and-trade program such as the one being developed in California?

ACCOUNTING AND CREDITING
What mechanisms need to be established to accurately and transparently account for reductions in forest-based carbon emissions and increases in atmospheric removals? And what mechanisms are needed to issue and track REDD+ carbon credits? This includes sections on measuring, monitoring, reporting and verifying (MMRV), crediting pathways and registries, as well as recommendations for managing leakage, double counting, and permanence (reversals).

SOCIAL AND ENVIRONMENTAL SAFEGUARDS
What steps should be taken to maximize social and environmental benefits, and avoid social and environmental risk?

2.1 Determining the Scope of REDD

Policy makers must consider the types of forest carbon emissions and atmospheric removals by forests that will be required and/or allowed as offsets, and the timing at which each type of emission/removal should be included, and ultimately credited, in a cap-and-trade program. Forest carbon programs can reduce atmospheric carbon by lowering emissions from deforestation and/or forest degradation, or by removing carbon from the atmosphere through the enhancement of carbon stocks (e.g., through tree planting) in degraded forests or previously forested areas. This forest carbon can also be grouped into the specific pools that are affected above ground such as leaves and branches, or below ground such as roots, as well as pools of living biomass or dead and decaying biomass.

The types of forest carbon emissions and removals to be included in the program should reflect a number of considerations, including, but not limited to: 1) the potential impacts on overall forest carbon emissions; 2) the technical capacity to monitor relevant forest carbon emissions and removals; 3) the potential social and ecological impacts of incorporating different types of emissions reductions and removals (e.g., afforestation using non-native species); and 4) the degree of measurement uncertainty associated with the emissions and removals and relevant carbon pools. This section addresses the first two considerations, while the latter two considerations are addressed in sections 2.4 and 2.2.4 respectively.

This section addresses the following questions:

1. What kinds of emissions reductions and removals should be accounted for in the Partner Jurisdiction REDD+ program, and when? Reducing deforestation, reducing forest degradation, enhancing forest carbon stocks, or some combination of these emissions types?

2. Which forest carbon pools (above-ground biomass vs. below-ground biomass, live vs. dead) should be included?

A. Issue Context

The acronym REDD+ encompasses reducing forest carbon emissions from deforestation and forest degradation and increasing carbon removals from the atmosphere through forest regeneration, forest restoration, tree planting, and the sustainable management of forests. Positive net emissions to the atmosphere take place when forests are removed and/or converted to systems that contain less carbon than the forests, or when forests are degraded through logging, fire, human use, or other activities. At the same time, forests can also remove carbon dioxide from the atmosphere when management interventions permit or accelerate the net accumulation of carbon from the atmosphere in trees through forest regeneration, forest restoration, tree planting, or sustainable management of forests. This is sometimes denoted by adding a "+" after REDD.

Table 2.1. Three types of forest carbon emissions to the atmosphere that are the focus of the ROW recommendations.

RED	D	+
Reductions in Deforestation	**Reductions in Forest Degradation**	**Carbon Stock Enhancement**
Reducing greenhouse gas emissions by slowing or stopping forest clearing or the conversion to lower-carbon land uses.	*Reducing greenhouse gas emissions by slowing or stopping net carbon emissions from forests caused by logging, fire, or other human-induced activities.*[6]	*Increasing forest carbon density (tons per hectare) by accelerating forest regeneration, forest restoration, planting trees, and the sustainable management of forests.*

In addition to the different emissions types in Table 2.1, there are different "pools" of carbon that can be included as part of their REDD+ program. Forest carbon can be divided among above-ground and below-ground pools. Most emissions of forest carbon to the atmosphere are usually associated with deforestation and forest degradation and reflect transfers from above-ground biomass (mostly tree trunks, but also dead wood, branches, and leaves) to the atmosphere through decay or fire. These are also the easiest emissions to measure. For these reasons, emissions associated with changes in the above-ground wood carbon pool are usually the focus of programs designed to lower emissions from deforestation and forest degradation.

Below-ground carbon pools (soil carbon, roots) are more difficult to measure. The soil carbon pool can contain more carbon than above-ground pools, but usually changes far less in response to forest conversion to crops or livestock, or logging, than above-ground carbon. The root carbon pool is usually a small fraction (approximately one fifth) of the above-ground carbon pool in trees. One significant exception is forests growing on peat soil, where changes in soil carbon may be significant. In jurisdictions where forests growing on peat are included in the jurisdictional baseline, it is important that the jurisdiction include the soil carbon pool where peat is present.

Like any measurements of greenhouse gas emissions to the atmosphere, the quantification of carbon emissions associated with deforestation, forest degradation, and carbon accumulation in re-growing or planted forests is not perfect, but it can be achieved within a range of uncertainty equivalent to other (e.g. energy/industrial) sectors. These uncertainties must be understood and managed to protect the integrity of any state's climate program and to fairly compensate partner jurisdictions for real emission reductions/removals. This issue is reviewed in Section 2.4.

Because of the wide range of possible circumstances and interactions between deforestation and forest degradation,[7] REDD+ programs should in general be designed to facilitate the inclusion of all major human-induced forest carbon emissions and removals as quickly as is technologically feasible. Accurately measuring forest carbon stocks and changes in forest carbon stocks from both deforestation and forest degradation before issuing REDD+ credit is the simplest way of accurately accounting for the largest sources of emissions.

Measurement capabilities/capacity and other factors (e.g. data availability) may make it impractical to include certain emissions types in a REDD+ program at the outset. However, it is important for a program to ensure that at least its major sources of forest-related carbon emissions and removals are covered. For this reason, it is recommended that any REDD+ program should, at the outset, include accounting for major emissions sources, which in most cases includes emissions associated with the transfer of above-ground carbon pools to the atmosphere through both deforestation and forest degradation. The program should have the option to include carbon stock enhancement should the REDD+ program have the technical capacity to do so. This minimum requirement will cover the majority of emissions and removals in Partner Jurisdictions.

Finally, REDD+ measures and policies associated with certain emissions reductions and increased removals could create negative ecological or social impacts. For example, a program that seeks to increase removals from the atmosphere by substituting low-carbon native vegetation, such as native grasslands or savannas, with plantations of exotic (non-native), fast-growing tree species, could have negative ecological consequences. Likewise, afforestation or reforestation programs could restrict access to land for smallholders and other rural people. The potential for negative social and ecological impacts of REDD+ programs should be diminished through safeguard systems, discussed in Section 2.4.

B. Options

ISSUE	OPTIONS	PROS AND CONS
Scope	**No Restrictions** Allow Partner Jurisdictions to participate with any of the three emissions and removals of REDD+ (i.e., reducing emissions from deforestation, reducing emissions from degradation, and increasing removals through enhancement of stocks), in any sequence.	**Pros** Greater flexibility for Partner Jurisdiction. **Cons** Risk of compromised atmospheric integrity by issuing offsets to programs where emissions for non-covered emissions and removals may be rising.
	Minimum Scope Restrictions Establish a minimum programmatic achievement for Partner Jurisdictions; for example, at a minimum they must have developed programs for reducing emissions from deforestation (RED) or deforestation and degradation (REDD).	**Pros** Could increase atmospheric integrity of the program by reducing the chance that emissions reductions are overestimated. **Cons** Could delay entry of some Partner Jurisdictions that do not yet have the technical capacity to account for those minimum emissions types (e.g., degradation).

	Major Emission Source Coverage Require participating Partner Jurisdictions to have, at the minimum, a program to reduce emissions from their major activity source (deforestation, forest degradation, etc.). Implicit in this requirement is a rigorous analysis of historical emissions to identify the major activity source.	**Pros** Could increase atmospheric integrity of the program by reducing the chance that emissions are overestimated or underestimated. **Cons** Could delay entrance of some strong REDD+ programs as jurisdictions analyze historical emissions.
	Maximum Coverage Require inclusion of all carbon emission reductions or removals (REDD+) at the outset of a program.	**Pros** Maximum integrity of program. **Cons** Could considerably delay entrance of jurisdictions that have developed strong programs.

C. Recommendations

1. Partner Jurisdictions should account for emissions from all major sources at the start of the REDD+ program, which, in the majority of jurisdictions, will mean accounting for both deforestation and forest degradation (REDD). Removals through carbon stock enhancement can be added by partner jurisdictions if and when it is deemed appropriate by both that jurisdiction and California. Comprehensively accounting for both deforestation and degradation at the outset increases the atmospheric integrity of the system. For its part, California should initially focus its sector-wide international offset system on emissions reductions from deforestation and forest degradation and be ready to include carbon stock enhancement as Partner Jurisdictions develop robust monitoring.
2. In addition, jurisdictional programs should demonstrate that they account for carbon pools that are expected to significantly change when deforestation or degradation takes place—in most cases, this means the major above-ground carbon pools, although in some landscapes such as those with peat soils, below-ground pools should be included.
3. California should be prepared to include carbon enhancement for crediting at the outset or at a later date as Partner Jurisdictions demonstrate robust methodologies for measuring carbon enhancement. While a comprehensive approach to include crediting of all types of emissions and removals over time should be encouraged, carbon stock enhancement should only be included if they meet minimum standards of measurement certainty as described in section 2.2.4.

2.2 Reference Levels, Additionality, and Own Effort

The integrity of REDD+ as an international offset within California's AB 32 will depend upon jurisdiction-wide accounting of emissions and on the *additionality* of the measures and policies that are financed through offset payments. To be *additional* means that emissions reductions would not have occurred in the absence of the REDD+ programs and the issuance of offsets or other mechanisms to finance these programs[8]. Partner Jurisdictions should also demonstrate their "own effort" in achieving part of these reductions to increase the contribution of the offset program to climate change mitigation. In this section, we review these closely related issues in the context of the principal approach for evaluating both: the emissions Reference Level (RL).

All emissions reductions regimes, whether designed to reduce emissions from fossil fuels or from deforestation, must designate a level of emissions that defines the system's performance. Cap-and-trade systems, such as those of California and the European Union, employ the emissions levels of 1990[9] as the point relative to which future emissions are capped and reduced over time. Jurisdictional REDD+ programs similarly establish an emission "Reference Level" as the basis for determining performance in achieving emissions reductions. The Reference Level (RL) is the best estimate of future emissions in the absence of the REDD+ program. Given the higher year-to-year variation of emissions from deforestation and forest degradation compared to emissions from fossil fuel combustion, REDD+ programs usually adopt average emissions across an historical period as the basis of the Reference Level (RL) below which emissions reductions are counted (see Figure 2.1).[10] Since the RL constitutes a legally defined benchmark for measuring jurisdiction-wide emissions reductions, it serves an analogous role to the cap in a cap-and-trade system. A cap serves as a binding limit on emissions, whereas a RL serves as a benchmark for quantifying reductions. Both have legal force within their respective programs. While REDD+ programs do not currently include penalties for failure to meet reductions targets, they do include legally enforceable sanctions against illegal deforestation and forest degradation, and in the case of Brazil and Acre have achieved very substantial emissions reductions while increasing agricultural production. These are real, verifiable and additional reductions at the aggregate scale as under cap-and-trade programs.

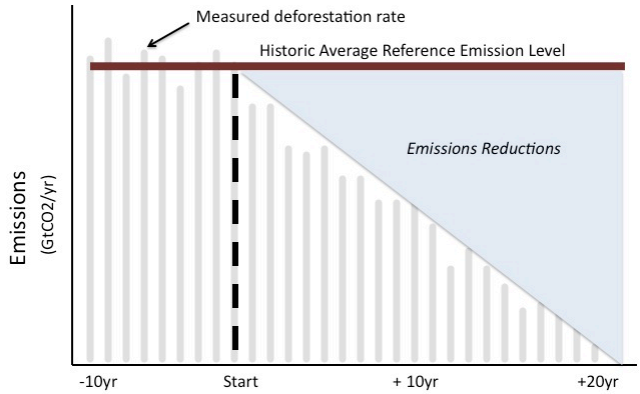

Figure 2.1 Hypothetical Reference Level based on historical emissions.

There are various reference works and guidelines that may be helpful in defining RLs and crediting baselines, which are consistent with the approach described above.[11] States such as Acre, which has achieved substantial reductions in emissions from deforestation, use methodologies consistent with the internationally recognized best practices described in these references.

The following issues are addressed in this section:

1. What is the best approach for establishing robust RLs?
2. Should Partner Jurisdictions be required to achieve a certain level of emissions reductions below their RL *before* they are able to generate carbon offsets or "credits" from further emissions reductions?

A. Issue Context

Reference Level Basics

The reference level (RL) is a key component of any REDD+ program because it is the basis for determining additionality, and the amount of emissions reductions the program has achieved and could deliver into the California international offsets system. The RL establishes what the business-as-usual scenario is for forest sector emissions and removals in the Partner Jurisdiction, and when that Jurisdiction, through its REDD+ program, lowers emissions to a level that falls below the RL (or the crediting baseline, should it be set below the RL). It is the rigor used in setting the RL that is the single best guarantee that these emissions reductions are additional. And it is the size of this difference between the RL and measured emissions that determines the maximum amount of emissions reductions that could be issued as offsets.

The most rigorous RL is also often the simplest. Deforestation and forest degradation tend to vary from one year to another because of a variety of economic and policy signals that have nothing to do with a jurisdiction's REDD+ program. The best way to estimate the RL is usually as a continuation into the future of the historical emissions level averaged over a period that is long enough to capture this year-to-year variation. In some cases, it is appropriate to adjust the historical emissions average upward if there is a compelling, scientifically rigorous reason that the business-as-usual trend is towards significantly higher rates of emissions. Major new investments in highways across remote forest regions that address critical transportation needs, or substantially higher profitability of forest conversion to crops or livestock because of higher market demand, are examples of possible reasons for upward adjustments of the RL. Similarly, downward adjustments may also be necessary under some circumstances, e.g. if a jurisdiction is simply running out of forests to clear or degrade.

Reference Level Principles

A variety of widely used guidelines for forest carbon and land-use change accounting generally agree on basic principles for the preparation of RLs.[12] These include transparency, completeness, consistency, comparability, and accuracy.

The simplest approach to the development of reference levels is to adopt a single, jurisdiction-wide RL, based on a jurisdiction-wide estimation of carbon stocks, rates and locations of land-use change, and carbon emissions associated with this land-use change, over the period selected for the RL.[13] As noted above (see Scope), the kinds of land use change covered by REDD+ can be classed in three categories: deforestation, forest degradation, and enhancement of carbon stocks. A single RL can cover all three categories, expressed in terms of both emissions and removals. To facilitate identification of sources of emissions in the future, emissions and removals should be reported separately (including in the RL). The procedures and methods used to formulate RLs should be documented so as to allow for independent technical assessment by other jurisdictions or by third-party verifiers. This is covered further in section 2.2.4.

The Jurisdictional Approach

A key feature of jurisdictional REDD is the focus on the state- or province-wide emission reference level, such as those that Chiapas and Acre are developing and implementing. By defining performance at the level of the entire jurisdiction, the state or provincial government gains a strong incentive and the necessary flexibility to achieve a number of important goals. It can align policies, improve law enforcement, institutionalize stakeholder consultation processes and compliance with social and environmental safeguards and strengthen or build new institutions to increase the likelihood of success. In theory, such a jurisdictional approach could be taken at the municipality scale/level. However, implementing a REDD+ program at a larger scale ensures many of the associated benefits of jurisdictional REDD+.

From an environmental perspective, jurisdictional or sectoral approaches to REDD have important advantages over stand-alone projects. Jurisdictional crediting accounts for potential "leakage" (shifts of deforestation and emissions) from one location to another within a jurisdiction in a way that is not possible at smaller scales. Similarly, aggregating emissions provides greater certainty that reductions achieved are "additional," as there is greater certainty over the trend in overall deforestation across a large region versus the likely fate of any particular piece of forest. In addition, concerns over the "permanence" of any particular project are diminished when the focus shifts to the aggregate performance in a jurisdiction that is managing its total emissions and that has the ability to enforce liabilities for any reversals. Monitoring and measuring forest carbon at a state or national level offers economies of scale and will reduce per-unit costs. There are also important economies of scale in terms of quantifying and managing risks that will reduce costs. For example, costs will be lower when risks of forest fires can be pooled over large regions, rather than requiring each project to insure against such risks independently.

A critical element of the jurisdictional approach to REDD is the ability of jurisdictions to enforce legal contracts within their own systems. This gives recourse to both buyers and sellers through established legal systems, obviating the need for complicated oversight systems and improving investor confidence.

Achieving comprehensiveness and accuracy in RL estimates, while ensuring efficiency (including cost efficiency) in data collection, analysis, and program administration is one of the most important challenges states must consider in establishing RLs. RLs will be more reliable and credible when they include a greater number of sources of emissions and removals, a greater number of carbon pools, and the data have a high degree of accuracy and precision; however, the complexity and cost of establishing RLs will also increase correspondingly. Setting statistical criteria for evaluating RLs relative to the lower range of a specified confidence interval creates a built-in reward for jurisdictions that improve the quality of their data and estimates, and it facilitates analysis by Partner Jurisdictions of the value of these efforts relative to the potential benefits.

In general, Partner Jurisdictions should be eligible for more credit the greater their ability to accurately measure land use change and carbon stocks. Choices of which activities, carbon pools and emissions factors to include in RLs are discussed further in section 2.1.

Demonstrating a Jurisdiction's Own Effort

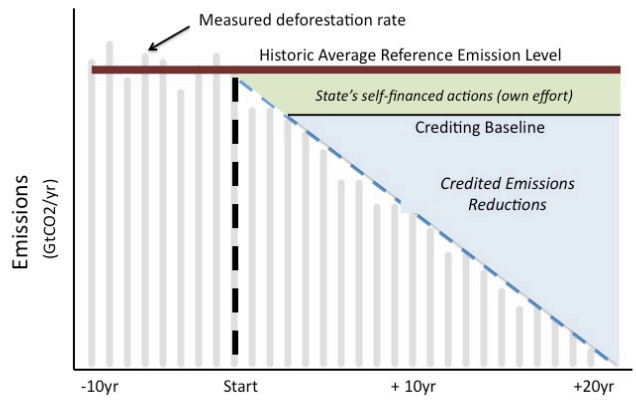

FIGURE 2.2 *Crediting baseline below a hypothetical reference level, to ensure a jurisdiction's own effort at reducing emissions. In some cases a jurisdiction may have already demonstrated their own effort, and would not need further reductions before crediting.*

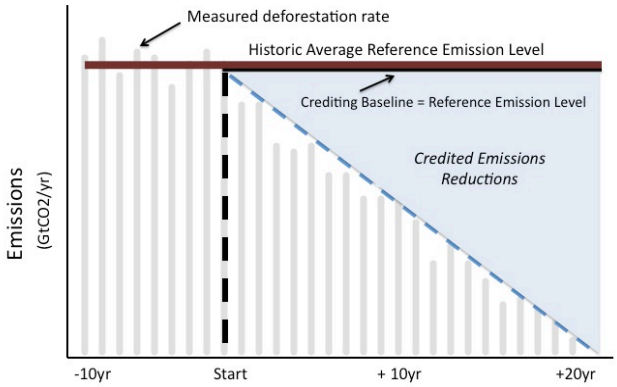

FIGURE 2.3 *Crediting baseline set equal to the reference level. This could be the case if a jurisdiction has demonstrated its own, significant effort to reduce emissions from deforestation and degradation prior to the REDD program.*

While crediting a jurisdiction for its forest emissions reductions is important, it is also important for a jurisdiction to demonstrate its own commitment to reducing carbon emissions. REDD+ has the potential to stimulate the development of policies and programs in partner jurisdictions that may generate emissions reductions beyond those offset from California. In this regard, the states of the Brazilian Amazon have achieved emissions reductions several times greater than the European Union from 2005 - 2009, but with only a tiny fraction of the funding. This remarkable progress in lowering emissions from deforestation in Brazil and elsewhere is at risk, however, since positive incentives have not been developed at scale. In other words, AB 32 REDD+ offsets may help secure emissions reductions many times greater than the emissions that are being offset.

One way a jurisdiction could demonstrate its own effort and generate additional benefits to the atmosphere is by establishing a crediting baseline somewhat below the reference level. This crediting baseline would define the level of emissions below which credits or offsets can be issued. The Partner Jurisdiction selling credits would have to achieve a certain amount of reductions by itself, in other words, therefore demonstrating its own effort to reduce forest-related carbon emissions before becoming eligible for offset credits.[14] It is important to consider that the lower this baseline is set, or the more aggressive these "own effort" provisions are, the lower

the incentive will be for a jurisdiction to undertake creditable activities.

Several criteria could be used to establish a crediting baseline, including, for example, a flat percentage reduction below the RL, or by defining the crediting baseline as the lower end of the RL's confidence interval. The second approach has an interesting effect of creating a positive incentive for the Partner Jurisdiction to improve the quality of their emissions monitoring system, since higher confidence in the estimates would result in a higher crediting baseline. Alternatively, the crediting baseline may be set at the RL and the Partner Jurisdiction can demonstrate own effort through rigorous analysis that demonstrates that the RL is conservative—e.g. that the true business-as-usual emission level is actually higher than the benchmark adopted. This may be justified, for example, when a Partner Jurisdiction employs official data from the national deforestation monitoring system to facilitate integration into the national REDD+ framework, even though the national monitoring system gives lower estimates of deforestation and associated emissions than the Partner's own, higher quality (more accurate) estimates. A Partner Jurisdiction could also show own effort by setting aside credits in a buffer and/or retiring credits outside of a market mechanism.

Regardless of how it is achieved, the un-credited effort undertaken by the jurisdiction to reduce emissions should be still be accounted for, and California may choose to set a certain percentage of overall reductions that should be "own effort".

Jurisdictions that have established an RL, adopted a target, implemented policies to reduce deforestation/degradation and are reducing deforestation/degradation in advance of supplying REDD+ credits to compliance carbon markets are clearly making their own efforts to reduce emissions, given the very low likelihood that emissions reductions already achieved will be fully compensated[15]. In cases such as this, RL and crediting baseline could be the same (See Fig. 2.3). Since different jurisdictions have made different levels of own effort to reduce deforestation and face different challenges, crediting baselines or other own effort provisions should reflect the specific circumstances of each jurisdiction.

B. Options

ISSUE	OPTIONS	PROS AND CONS
Setting Reference Emission Levels	Based on historical deforestation rates.	**Pros** Data widely available and used; measurable. **Cons** Does not adapt to fundamental changes in the drivers of deforestation or the amount of forest remaining; and may not fully capture current or future trends (up or down).
	Based on historical deforestation rates with adjustments for circumstances of the jurisdiction. Reference Levels adjusted upward or downward based on evidence that historical data alone would not be the most accurate benchmark for future emissions.	**Pros** Widely supported internationally; flexible enough to support unique jurisdictional circumstances. **Cons** No accepted formula; diverse methodologies.

Demonstrating a Jurisdiction's Own Effort	Partner Jurisdictions should demonstrate their own effort at reducing emissions.	**Pros** Requires Partner Jurisdiction's own (non-compensated) effort; added benefit to atmosphere. **Cons** May not provide adequate incentives to reduce emissions if requirement is too onerous.
	Partner Jurisdictions should not need to demonstrate their own effort beyond what is crediting in a REDD+ program.	**Pros** Offers Partner Jurisdictions more incentives to reduce. **Cons** Potentially fewer net atmospheric benefits.

C. Recommendations

1. Reference levels (RL) should be established at the beginning of the program, with the Partner Jurisdiction choosing a ten-year reference period between 1995-2010, and taking an average of the annual emissions from that period using the best available data. If ten years with at least four dates in which jurisdiction-wide deforestation is mapped are not available, another period may be substituted but must be supported by empirical evidence to show that it represents an average rather than an exceptionally high rate.
2. In certain limited circumstances, reference levels may be adjusted upward or downward from the historical average to account for rigorously-justified predictions that future emissions would rise or decline in the absence of the REDD+ program. Partner Jurisdictions that propose to adjust their historical RLs to make them more reliable and robust must substantiate proposed adjustments with transparent, credible evidence.
3. REDD+ jurisdictions should demonstrate own effort beyond what is credited through the REDD program. One option for this is to establish crediting baseline below the RL. If a Partner Jurisdiction has already demonstrated, or is currently demonstrating, own efforts in reducing emissions, additional measures may not be necessary, and the crediting baseline could be set equal to the reference level. In any case, own effort reductions should be measured and reported.

2.3 REDD+ Architecture

This section discusses the key technical elements that must be addressed in designing a compliance-grade REDD+ program that could generate emissions reductions capable of being recognized in a cap-and-trade program such as the one being developed in California. It builds on the legal and institutional considerations described in Section 4. Both cap-and-trade Administrators and Partner Jurisdictions will need to decide on the key elements in this section before any potential offset linkages might be established. The intent of the section is to explore the design options that Administrators and Partner Jurisdictions would need to consider before moving forward.

2.3.1 Crediting Pathways and Nested Crediting

Crediting for REDD+ offsets will require a clearly defined pathway and set of responsibilities to navigate the legal and quality control issues that surround such offsets. REDD+ regulations will need to specify who will issue REDD+ credits or allowances, to whom, and how those credits will be issued, registered, and tracked. Clarifying the crediting pathway is important because it can affect the design of REDD+

programs and any provisions in a cap-and-trade program that would allow offsets for emissions reductions achieved under such a program. Key issues addressed in this section include:

1. Which body (or bodies) will issue REDD+ credits?
2. To which entity (or entities) will credits be issued?

A. Issue Context

The main policy issue regarding crediting pathways concerns how offset credits will be issued or recognized by the relevant cap-and-trade program. One option would be for the cap-and-trade Administrator (such as the California Air Resources Board) to issue offset credits directly for eligible reductions and removals. Another would be for the Administrator to recognize and convert credits issued by other entities such as the Partner Jurisdiction or an approved third party program such as the Climate Action Reserve (CAR), Verified Carbon Standard (VCS), or American Carbon Registry (ACR).

Determining the crediting pathway has important implications for each jurisdiction's level of involvement in REDD+ program administration and enforcement. With respect to international, sector-based credits, California's regulations (and accompanying staff report) are currently silent on the question of whether it will issue credits directly to eligible sector-based reductions and removals or recognize and convert credits issued by REDD+ Partner Jurisdictions and/or approved third-party programs. However, it may be easier for both technical and legal reasons for the Administrator to recognize credits issued by Partner Jurisdictions or a third party-program rather than issue credits directly for emissions reductions achieved in foreign jurisdictions. In addition, the available expertise and capacity of California regulators, REDD+ Partner Jurisdictions and approved third-party programs to effectively manage these responsibilities may also influence which option(s) are most workable, at least in the near term.

Another consideration is the potential need for REDD+ Partner Jurisdictions to obtain compensation for the REDD+ emissions reduction in a number of different pay-for-performance systems (market and non-market). For example, projected REDD+ offset demand from California is relatively small compared to the potential supply from prospective REDD+ Partner Jurisdictions. This means the Partner Jurisdictions will likely need to find other market and non-market opportunities beyond California for compensating their REDD+ emissions reductions. The administrative burdens of selling to multiple markets could be reduced if the Partner Jurisdictions issue credits themselves for reductions achieved under their own programs or register these reductions with widely recognized third-party programs where a single "currency" could potentially serve a variety of voluntary and regulatory markets as well as the needs of other funders. Using a single program and accounting framework would also mean the Partner Jurisdiction would only need to work with one baseline, monitoring, reporting and verification (MRV) system and set of rules

Defining Nested Project Crediting

California's cap-and-trade regulations (and associated staff report) propose two pathways for crediting international-sectoral policies and measures (including REDD). Specifically, jurisdictions could be credited for sector-wide emissions reductions achieved, and/or project developers could be credited for projects that are nested within a jurisdiction-wide sectoral program.

The term nested projects refers to REDD+ projects whose site-specific emissions reductions (or removals) are accounted for, but where credit issuance is dependent upon the overall performance of the jurisdiction in which they are located (i.e., Acre or Chiapas). This jurisdictional scale reconciliation is important for maintaining atmospheric integrity, i.e., to ensure that the number of credits issued to all actors (projects and jurisdiction) does not exceed the total number of emissions reductions (after accounting for out-of-state leakage and reversal buffer contributions) that are generated across the state.

Nested project accounting requires the establishment of consistent and harmonized reference levels, baselines and MRV (monitoring, reporting and verification) between the project and jurisdictional (i.e. state) scales. The host-state's REDD+ program (as set out in the linkage agreement with California) would define how credits will be allocated between projects and the jurisdiction (i.e., State government) based on emissions reduction performance, including how leakage and reversal mitigation (e.g., through shared buffers) will be managed/allocated.

for handling leakage, reversals and permanence. This would reduce incompatibility and double-counting risks that can materialize when applying more than one carbon accounting framework within a given Jurisdiction.

The second major question for defining a crediting pathway is deciding who may *receive* credits. All else equal, credits should be allocated to actors or activities based on which arrangement will most effectively create incentives for, and channel resources to, the required emissions reduction measures (REDD+ policies, programs and projects). For example, if targeted reductions (and accompanying social/environmental objectives) could be most effectively achieved and sustained through jurisdiction-wide policy reforms and strengthening of government institutions, then it may make sense to allocate credits primarily at the jurisdictional level and thereby maximize incentives for undertaking these reforms. If, on the other hand, reductions might be best and most rapidly achieved by leveraging the resources of private project developers, then issuing credits directly to third parties undertaking projects nested within a jurisdictional framework might be preferable.

Providing REDD+ Partner Jurisdictions with the option of issuing credits at both the jurisdictional and nested-project scale would allow a diverse mix of policy, programmatic measures and projects to reduce emissions. However, to maintain atmospheric integrity at the state level, the REDD+ program would have to clearly define how reference levels, baselines, MRV, accounting and crediting at the various scales would be integrated, and how leakage and reversal risks and responsibilities would be shared between government and project actors.

B. Options

ISSUE	OPTIONS	PROS AND CONS
Authority for Credit Issuance	The cap-and-trade program Administrator issues credits directly to qualifying entities.	**Pros** Administrator may have more control over issuance decisions and invalidation than under other arrangements. **Cons** May face legal obstacles related to regulatory authority in other Partner Jurisdictions. Burdensome for Administrator to establish and manage new accounting and crediting mechanism for REDD.
	A Partner Jurisdiction recognized by the Administrator issues credits directly to qualifying entities. Such credits are then recognized and converted into compliance offset credits by the Administrator.	**Pros** May be easier from a legal standpoint for Administrator to recognize credits issued by an external program. **Cons** Depending on the nature of any linkage arrangement between the Administrator and Partner Jurisdiction, it may be difficult for Administrator to exercise regulatory authority (e.g., in deciding whether and which credits should be invalid or ineligible). May be perceived as a conflict of interest for Partner Jurisdiction to issue credits to itself.
	A third-party entity recognized by the Administrator issues credits directly to qualifying entities. Such credits are	**Pros** Avoids potential regulatory authority/enforcement issues for Administrator, plus avoids possible perceived conflict of interest associated with Partner Jurisdictions issuing their own credits. Credits from third-party program could serve multiple

	then recognized and converted into compliance offset credits by the Administrator.	markets/funders. Potential to tap existing programs for issuing credits, which can be deployed relatively rapidly. **Cons** Accountability and legal authority for third-party entities may be unclear. Could force Partner Jurisdictions to link with multiple third-party entities in managing its emissions-reduction portfolio.
Credit Recipients	REDD+ Partner Jurisdictions are the only entities to receive credits from California, based on total reductions achieved across the state. Partner Jurisdictions can develop their own system for transferring credits to projects.	**Pros** Direct crediting of Partner Jurisdictions incentivizes development of REDD+ government policies and programs. **Cons** Lack of direct crediting pathway for project developers could discourage REDD+ project actions undertaken by private parties, local communities and other land managers.
	Developers of nested projects only, dependent upon achievement of state-wide reductions.	**Pros** Direct crediting of nested projects incentivizes development of projects, which can complement government actions. **Cons** Lack of crediting pathway for Partner Jurisdictions greatly reduces incentives for government to develop REDD+ policies and programs.
	Both Partner Jurisdictions and developers of nested projects within states.	**Pros** Provides flexibility to Partner Jurisdictions and combines benefits of both approaches above. **Cons** More complex accounting and crediting mechanism is needed.

C. Recommendations

1. A cap-and-trade program Administrator like California should not issue credits directly to REDD+ Partner Jurisdictions, but instead recognize credits issued by Partner Jurisdictions or approved third-party programs that meet California's requirements. Such recognized credits should be eligible for conversion into the Administrator's compliance units. This reduces the burden to the program Administrator, and taps into the existing structures that have been developed by Partner Jurisdictions and/or third-party programs.
2. REDD+ Partner Jurisdictions should decide what will be eligible for crediting: jurisdictional scale efforts only, nested projects only, or both scales of policies and measures.
3. In states where nested projects may be credited, the REDD+ program should clearly specify how atmospheric integrity at the state level will be maintained, including defining how reference levels, MRV, accounting and crediting at the jurisdictional and project scales will be integrated; and leakage and reversal risks and responsibilities will be shared between government and project actors.

2.3.2 Registry Infrastructure

Registries are a key part of the infrastructure necessary to support any trading system for reducing greenhouse gas emissions. A registry is essentially a database used to track information necessary to ensure that regulated entities comply with the requirements of a cap-and-trade system. The basic function of an emissions trading registry is to track the allocation and transfer of tradable compliance units (i.e. allowances, credits, or permits) among regulated entities.

When offsets are part of an emissions trading system, additional information tracking functions are required. Specifically, a database must be maintained containing information on verified jurisdictional GHG reductions and/or removals, and where nested projects are involved, descriptive project details (project type, location, name, size, etc.) as well as monitoring data and verification reports. Systems are also needed to issue and track the transfer of offset credits (equivalent to allowance tracking systems).

This section addresses the following issues:

1. Should a single registry be created for all REDD+ programs linked to a cap-and-trade system, or should multiple registries be allowed?
2. Who should administer REDD+ registries for tracking jurisdiction-level REDD+ emission reductions, REDD+ credit issuance, and REDD+ projects?
3. Should the Administrator establish minimum standards for registry functions, operations, and security measures?

A. Issue Context

To interface with the Administrator's cap-and-trade program, Partner Jurisdictions will need functioning registry systems like those required for any carbon offset program. Specifically, REDD+ registry systems will be needed to:

- Maintain secure, transparent, publicly reviewable information on overall REDD+ emissions/removals and deforestation/degradation trends;
- record and make available information on all policies and programs hosted at the jurisdictional level aimed at reducing forest carbon emissions or increasing sequestration;
- record and make available information on all REDD+ nested projects including information on project type, developer, location, size, baseline, monitoring plan/data, and verification reports;
- and track credits issued for greenhouse gas (GHG) reductions/removals achieved by REDD+ programs including projects operating within the jurisdiction.

There are multiple options for how to structure and administer these kinds of registry functions. In most cases, a single registry is established to serve the needs of a single cap-and-trade program within a jurisdiction. California, for example, will have a single registry system to track the allocation and transfer of compliance units (i.e., allowances and offset credits) for its GHG cap-and-trade program. The European Union Emissions Trading System (EU ETS) for greenhouse gas emissions, on the other hand, used to have multiple registries maintained by the various national jurisdictions participating in the program. Transactions were conducted through the Community Independent Transaction Log (CITL), which ensured that transactions are recorded appropriately in different registries. For a variety of reasons, including security breaches at some national registries, the EU ETS moved toward a single unified registry system, the European Union Transaction Log.[16] Finally, under the Kyoto Protocol's international GHG emissions trading system, individual registries are maintained by each country subject to emissions targets. Similar to the EU ETS, all transactions of compliance units must be conducted through an International Transaction Log (ITL).[17]

REDD+ registry systems should contain strong security measures to prevent unauthorized access that could result in either the modification of emissions information or the illegal sale of credits.

Cap-and-trade Administrators and Partner Jurisdictions will need to make choices about the number of registries allowed and who administers them. There may be practical and policy reasons for seeking to consolidate registry functions. For example, a single registry system would ensure that information is consolidated and accessible in a common format, and could facilitate the execution and tracking of allowance/credit transfers. It could also ensure a common set of operating procedures, making it easier to oversee and ensure system security.[18] Creation of a single registry would likely lead to centralizing the decision-making authority with respect to registry information and credit issuance/tracking.

For practical reasons, however, a centralized registry system (e.g., one administered exclusively by the Administrator) may not make sense. Because information validation, credit issuance and tracking, and registry administration functions are so closely related, it may make sense to link registry administration to credit issuance authority. In particular, if Partner Jurisdictions or third-party programs will retain authority to issue credits (which the Administrator could then recognize, for example, through a linkage arrangement), then it probably makes practical sense for such Partner Jurisdictions or third-party programs to maintain their own registry system.

However, where a Partner Jurisdiction administers its own registry system concerns about conflict of interest may arise because the jurisdiction could in effect be issuing credits to itself. To address these concerns, the Partner Jurisdiction may wish to involve third-party registry administrators, who would provide independent validation of registry contents and credit issuance determinations.

Additionally, it is likely that Partner Jurisdictions will ultimately need to participate in a national-level registry, and these registries will need to reconcile with each other, and be able to coordinate with cap-and-trade Administrators.

It should be noted that in the Administrator's *domestic* offset program, third-party programs may be relied on to oversee project registration and credit issuance. These programs will therefore need to maintain project information registry systems, and possibly separate credit tracking systems. However, the Administrator retains ultimate authority with respect to issuance of compliance credits. Thus, credits issued by third-party programs must be converted to compliance credits (meaning, effectively, that they must be re-issued in the Administrator's compliance registry system). A REDD+ program could, in principle, follow a similar model.

With respect to security issues, the Administrator will have an interest in ensuring that any registry systems associated with California-eligible REDD+ credits will have sufficient security measures to prevent unauthorized modification of emissions or project information, and to prevent fraudulent issuance or transfer of REDD+ credits. Specific options and requirements in this regard will need to be further elaborated based on a technical review.

B. Options

ISSUE	OPTIONS	PROS AND CONS
Registry	Create a single unified registry for all REDD+ offset projects and credits potentially eligible under the Administrator's cap-and-trade program.	**Pros** Ensures that information is consolidated and accessible in a common format, and can facilitate the execution and tracking of credit/allowance transfers. Could also ensure a common set of operating procedures, making it easier to oversee and ensure system security. **Cons** Could lead to centralizing the decision-making authority with respect to registry information and credit issuance/tracking, which may or may not be politically or legally acceptable to Administrator or Partner Jurisdictions. Will be redundant when Partner Jurisdictions have developed their own registries.

Allow Partner Jurisdictions to develop their own registries, or have third parties do so.	**Pros** Would be more compatible with a system where multiple entities (e.g., Partner Jurisdiction or third-party programs) are responsible for issuing credits. **Cons** Would need to design system so the registries could effectively "talk" to each other and use harmonized reporting protocols, etc.

C. Recommendations

Decisions about registry creation and administration should be based on considerations of who has the authority to collect and validate information about REDD+ emission reductions (and the performance of nested projects) and to issue REDD+ credits. Following the recommendations in Section 3.2.1, REDD+ Partner Jurisdictions are likely to retain this authority, possibly relying on third-party programs for certain functions. In light of this kind of arrangement:

1. REDD+ Partner Jurisdictions should be responsible for designing and establishing their own registry systems, including publicly reviewable databases containing verified information on overall, jurisdiction-level REDD+ emissions and the details and performance of emissions reductions policies, programs, and projects, as well as credit issuance and tracking systems. If the jurisdictional program is comprehensively managed within a national registry and the national registry meets all other requirements outlined here, then that national registry could serve as the jurisdictional program registry as well.
2. Partner Jurisdiction registries should contain information on all REDD+ policies and measures in the state, including projects that are nested in the state REDD+ program, to maintain atmospheric integrity within the accounting system.
3. Partner Jurisdictions should maintain registries that are compatible with, or integrated within, any fully-functioning REDD+ registry systems maintained by their respective national governments.
4. If registry systems are administered on behalf of Partner Jurisdictions by independent third parties, they should comply with the rules and procedures established by the Partner Jurisdictions.
5. The Administrator should work with Partner Jurisdictions to establish minimum operating standards and security procedures for REDD+ registries in order to ensure the integrity of the Administrator's offset market. These standards and security procedures should be periodically reviewed and evaluated, and registry administrators should be regularly audited to ensure that standards and procedures are consistently and effectively applied.

2.3.3 State-level accounting

The intent of this section is to review key considerations that must be addressed when developing a system for measuring changes in forest carbon, and establishing a program for crediting reductions in forest carbon emissions and increases in atmospheric removals by forests. Emissions reductions and increased removals that are credited within a REDD+ program must be above and beyond what would have happened in the absence of the REDD+ program to ensure the atmospheric integrity of any cap-and-trade program that ultimately uses the offsets.

2.3.3.1 Leakage

Leakage refers to any net increase in carbon emissions (or reductions in carbon enhancement) occurring outside of the REDD+ program or nested projects as a result of REDD+ policies and measures that are implemented.

This section addresses the following issues:

1. How should the REDD+ program handle leakage within host state boundaries, within national boundaries, and internationally?
2. What role should the REDD+ program play in monitoring or addressing key drivers of deforestation?

A. Issue Context

Policies, programs and projects designed to reduce deforestation could, in certain circumstances, have a perverse effect of increasing deforestation outside of the boundaries of the REDD+ intervention. This effect is known as leakage, and comes in several forms, most significantly as market leakage and activity-shifting leakage.

A well-designed REDD+ program should address integrated land use, so that emissions reductions can be achieved while related economic activity is sustained, maintaining or increasing economic development. Otherwise, jurisdictional REDD+ may cause leakage if it lowers the production of agricultural and forestry products—through restrictions on forest clearing or logging—without slowing the demand for these products. If the decline in production is sufficient to create shortages in the regional or international markets for the products in question, *market leakage* can result, e.g. if resulting price increases raise the profitability of forest conversion to agricultural systems or logging operations.

The second type of leakage, *activity shifting,* occurs when individual agents (agricultural industries, logging companies, or individual farmers, for example) begin deforesting or logging forests outside of the jurisdiction as a response to a REDD+ program. For example, a government REDD+ policy or program that strengthens state-wide enforcement of protected areas or conservation set-asides could have leakage effects with deforesting agents moving to neighboring states, assuming there are no mobility barriers.[19]

Market leakage is spatially diffuse and difficult to detect. If the price of palm oil, beef, soy, timber or another deforestation-driving commodity goes up because a REDD+ program is substantially restricting expansion of cropland or logging operations into forests, then producers of those commodities around the world will have a greater economic motive to expand their production. If that expansion occurs without new forest clearing or degradation, then market leakage is avoided. If cropland or logging expansion is achieved by clearing or degrading forests in regions without REDD+ programs and compensated targets, (i.e. if a REDD+ program causes increased deforestation or degradation elsewhere by increasing the profitability of land conversion) then market leakage is occurring. The best way to avoid market leakage is therefore to build into REDD+ programs interventions designed to increase the production of these commodities on lands that are already cleared or in forests that are already degraded. Such increases in production have been achieved at scale in the Brazilian Amazon (see Figure 1.3), contributing to the sustainability of this region's decline in deforestation.

Activity shifting leakage is easier to detect than market leakage because it is far less diffuse. Farmers, ranchers, agribusinesses, developers or logging companies that face restrictions on access to forest land through a REDD+ program in one state tend to seek land in neighboring states, or elsewhere in the nation where the REDD+ program is operating, because of their familiarity with the laws, institutions, and culture of that nation. Spatial analysis methods have been developed for detecting activity shifting leakage to neighboring regions within the same nation.[20]

Assuming that interstate leakage associated with activity shifting can be detected, an effective system for deducting this leakage from the Partner Jurisdiction's emissions reductions is needed. The first option is to account for leakage at the state level, looking at expected interstate leakage from all statewide REDD+

activities. Under this option, leakage deductions would be allocated in a proportional "top down" manner to all individual landowners, project developers or government agencies receiving credits. The second option is to require nested projects and government policies/programs to assess and account for their interstate leakage impacts individually (e.g., using the VCS, CAR or ACR standards/frameworks) without necessarily reconciling leakage between individual REDD+ policies and measures, since atmospheric integrity is maintained at the state level (i.e., credits are only issued for net state-wide reductions).

B. Options

ISSUE	OPTIONS	PROS AND CONS
International Leakage	Require the accounting of international leakage.	**Pros** Accounts for emissions at the broadest possible scale. **Cons** Hard to attribute and account for leakage from REDD+ policies and measures in one country to potential increases in deforestation/degradation in another.
	Do not require the accounting of international leakage.	**Pros** The most feasible solution and consistent with international general practice. Accurate if significant market leakage is not expected. **Cons** May overestimate net emissions for certain REDD+ policies and measures susceptible to international market leakage.
	Do not require the accounting of international leakage but require that Partner Jurisdictions increase production of deforestation and degradation driving commodities at business-as-usual rates	**Pros** Decreases risk of market leakage and activity shifting leakage. **Cons** May be difficult for some jurisdictions to achieve.
Interstate Leakage	Require the accounting of interstate leakage.	**Pros** Maintains atmospheric integrity at the country level. **Cons** Requires additional leakage accounting methodologies and MRV.
	Do not require the accounting of interstate leakage.	**Pros** Simple and less costly. **Cons** Compromised atmospheric integrity of REDD+ system.

	Do not require the accounting of interstate leakage but require that Partner Jurisdictions increase production of deforestation and degradation driving commodities at business-as-usual rates	**Pros** Decreases risk of market leakage and activity shifting leakage. **Cons** May be difficult for some jurisdictions to achieve.
Intrastate Leakage (only relevant for nested project accounting)	Allow states flexibility to manage leakage within state boundaries, and among REDD+ actors with a minimum requirement that the sum of project-level credits is less than or equal to emissions reductions below the jurisdiction-wide crediting baseline.	**Pros** Enables states to define most effective leakage mitigation and sharing arrangements. **Cons** Only works in true nested system where credits are only issued based on net reductions across state, which is what the Administrator is contemplating.
	Prescribe how in-state leakage must be accounted for, including by governments and nested projects.	**Pros** Top down, single approach applies to all partnering Partner Jurisdictions. **Cons** Since atmospheric integrity is already maintained at state level, it is not necessary to be prescriptive in this way.
	Do not require the accounting of intrastate leakage but require that Partner Jurisdictions increase production of deforestation and degradation driving commodities at business-as-usual rates	**Pros** Decreases risk of market leakage and activity shifting leakage **Cons** May be difficult for some jurisdictions to achieve.

C. Recommendations

Cap-and-trade program Administrators should require that Partner Jurisdictions establish robust frameworks and mechanisms to manage, mitigate and account for leakage that include the following:

1. Partner Jurisdictions should address the possibility of intrastate leakage from nested projects by securing project-level performance in lowering emissions against the jurisdiction-wide reference level.
2. Partner jurisdictions should demonstrate that their REDD+ programs and potential leakage mitigation efforts are addressing the drivers, agents and causes of deforestation within the state/province boundaries the maximum extent feasible . Where economically appropriate, partner jurisdictions should seek to eliminate the risk of international and interstate market leakage by increasing production of deforestation- and degradation-driving commodities at a similar level to what would take place in the absence of the REDD+ program; in some cases this is possible through sustainable intensification of yields on lands already cleared and through reduced impact forest management.
3. Partner Jurisdictions should establish robust frameworks to monitor, or otherwise estimate, and account for any residual interstate leakage that may occur, and ensure only net GHG reductions are credited.

2.3.3.2 Reversals and Significant Natural Disturbances

Potential reversals must be properly addressed in any REDD+ program in order to maintain atmospheric integrity while maximizing (and sustaining) the participation of state actors to reduce emissions. Reversals are defined as emissions reductions that are credited at one point in time, but reversed through increases in emissions beyond the reference level at a later point in time. The risk of such reversals must be assessed, and a mechanism is needed that ensures all credits issued are backed by long-term emissions reductions. A policy is also needed to address significant changes in forest carbon stocks associated with severe drought or windstorms, or increases in forest carbon through CO_2 fertilization.

This section will address several issues including:

1. How the REDD+ offset provision in AB 32 can reduce the risk of performance reversals and manage reversals when they occur
2. How changes in forest carbon stocks associated with significant natural disturbances, such as severe drought or windstorms that are unrelated to REDD+ programs, should be managed.

A. Issue Context

California's decision to focus its REDD+ offset provisions to sector-wide systems operating across entire state territories brings with it many advantages for achieving robust emissions reductions with a very low likelihood of performance reversals. Crediting to Partner Jurisdictions is based on state-wide emissions reductions that require policy reform, law enforcement, and changes in the rural development model that address the underlying causes of both deforestation and degradation (through logging and fire). In other words, jurisdictional REDD+ requires changes in the rural development model that greatly increase the long-term sustainability of the emissions reductions that are achieved. If the Scope of jurisdictional REDD+ programs includes both emissions from deforestation and forest degradation as recommended by the ROW (see Section 2.1), then credits will only flow into the Partner Jurisdiction if real, additional, verified emissions reductions have been achieved across the entire state for all human-induced emissions of forest carbon to the atmosphere. This comprehensive approach to driving emissions reductions is analogous to the shifts in energy and transport sectors to lower emissions per kilowatt/mile driven that are contemplated in the AB 32.

Like California's emissions reduction policy for energy and transportation sectors, potential Partner Jurisdictions that are developing REDD+ systems have a limited time frame that does not yet include a zero net emission target. Acre and the Brazilian national government have adopted a target of reducing deforestation (and associated emissions) in the Amazon region 80% by 2020, and nearly achieved this target well in advance of that deadline, in 2012 (see Figure 1.3). A similar target for emissions from forest fire and selective logging has not yet been established. Brazil and Acre have formalized their intention for reducing emissions from deforestation into the future beyond 2020 by adopting a declining reference level. The reference level, which is calculated based upon average historical emissions, is adjusted forward at five year intervals (e.g. the first reference level, based upon average emissions from 1996 to 2005, is now lowered to reflect average emissions from 2001 to 2010), and therefore declines as reductions in emissions are achieved. Given California's commitment to an 80% emissions reduction (relative to 1990) by 2050, a similar rate of emissions reductions should be expected from Partner REDD+ Jurisdictions, and Acre is already well ahead of this goal. Ultimately, reference level emissions should decline to zero in line with expectations about when emissions would have ceased in the absence of a REDD+ program (e.g., when jurisdictional forest carbon stocks would have been exhausted). To reduce the risk of performance reversals within the 2020 time frame of the AB 32, Partner Jurisdictions could establish mechanisms for compensating possible emissions reversals (when emissions rise above the jurisdictional reference level). Similarly, Partner Jurisdictions should establish mechanisms for managing post-2020 emissions reversals, which would occur if emissions rose above future reference levels (that are, presumably, declining over time). Such mechanisms could include banking a portion of the emissions reductions achieved by 2020 within an insurance buffer.

In addition to deforestation, forest fire, and logging, tropical forest emissions to the atmosphere can change through other causes that are not related to the land-use decisions of farmers, ranchers, industries, and communities. There is evidence that many tropical forests—including those of the Amazon region—are growing, increasing their forest carbon stocks by hundreds of million tons of carbon per year, possibly through the influence of CO2 fertilization (higher CO2 concentrations in the atmosphere) (Lewis et al. 2010). Tropical forests are also subjected to natural disturbances that temporarily reduce forest carbon stocks, including severe drought and windstorms or hurricanes. The severe Amazon drought of 2005 killed trees containing a billion tons of carbon[21] and a similar drought occurred in 2010.[22]

Emissions from such natural disturbances may be managed in a couple of ways. One option is to "zero out" these emissions by adjusting the jurisdictional baseline; a second option is to compensate for them using buffer credits (or some other insurance payout). Both of these options attempt to avoid penalizing the host state or affected projects for these non-regular emissions releases. They are also not mutually exclusive (i.e., zeroing out could be used for some kinds of natural disturbances, and buffer compensation used for others).

Buffer Approaches for Addressing Reversal Risk

Over recent years, buffer approaches have emerged as a leading mechanism for addressing forest carbon reversal risk. Buffers work by holding a portion of the credits issued to individual projects (and potentially jurisdictions) in a pooled buffer account that are retired in the event of a reversal (or presumed reversal in the case of terminated projects/programs) no matter where it occurs in the system. The percentage of credits withheld (e.g., 10-40%) is typically based on an independent assessment of the risk of reversals for an area over a predefined time period (e.g., 100 years).

The effectiveness of buffer mechanisms is enhanced by diversifying the pool of credits (in terms of project/activity type and location), reducing the risk that a major reversal event in one geographic area (or hitting one activity type such as avoided degradation) affects more than a small portion of the credited REDD+ measures. For this reason, Acre and Chiapas would benefit from pooling their buffer credits with each other, and potentially with the buffer pools of additional jurisdictions. In addition, it may benefit the program to allow the buffer pool to be filled, or partially filled, with other credit types from protocols approved by the Air Resources Board, to support portfolio diversification.

Finally, it should be noted that insurance approaches (either operating independently or supplementing buffer mechanisms) are still in an embryonic stage. However, as REDD markets deepen and underwriting risks become better quantified we can expect to see such products emerge for helping to manage reversal risk.

In addition to adopting a buffer or other insurance approach for covering potential reversals, jurisdictions may be able to implement policies or legal instruments that help to alleviate or address certain kinds of reversal risks. For example, jurisdictions could require that nested projects operate under contracts or other legal frameworks defining specific reversal remedies that can be enforced by the jurisdiction.

Under the "zeroing out" approach, certain natural disturbances would be accounted for by adjusting the jurisdictional baseline to reflect the emissions associated with the disturbance.[23] For these disturbances, a determination would be required that the disturbance (and its associated emissions) would also have occurred in the absence of a REDD+ program, and therefore should not count against the net emission reductions achieved by the REDD+ program.[24] In these cases, no compensation would be required from credit buffer accounts.

In the buffering approach, net emissions from natural disturbances would be compensated for by retiring an equal number of buffer credits. Given the potential for large-scale losses, it's important that the buffer pool be appropriately capitalized and/or diversified with credits from a range of jurisdictions/sources, and that other controls are put in place.[25] Instead of, or to supplement, the buffer approach, insurance products could also potentially be used to cover natural disturbance losses without unfairly penalizing individual government and project actors.

Finally, there are a number of options for the oversight of mechanisms to address reversals. A cap-and-trade Administrator could seek to design and implement (and potentially manage) its own mechanism for

addressing reversals; this would give the Administrator ultimate control over how the system operates. However, this would be a time-consuming and resource-intensive exercise for the Administrator. Furthermore, because California's demand for credits may be small relative to the potential REDD+ credit supply from Partner Jurisdictions, it may not make sense for an Administrator to create a unique mechanism that is not interoperable with other existing and emerging approaches for managing reversal risk.

Alternatively, Partner Jurisdictions could establish their own mechanism or use existing third-party mechanisms for guaranteeing compensation in the event of reversals (at the jurisdiction and project levels, as appropriate) and the Administrator could then evaluate whether these mechanisms are sufficient and comparable to its general program requirements for permanence.

B. Options

ISSUE	OPTIONS	PROS AND CONS
Reversal Mechanisms	Cap-and-trade Administrator designs, implements, and manages its own mechanism for addressing reversals.	**Pros** Top down control by Administrator. **Cons** Time consuming to establish, resource intensive to manage, and interoperability challenges given that California may account for only a small portion of Partner Jurisdictions REDD+ portfolio.
	Partner Jurisdiction designs, implements, and manages its own mechanism for addressing reversals, or relies on a third-party program for this. Administrator responsible for evaluating proposed mechanism in regards to compliance with own regulations/requirements.	**Pros** Enables use of existing mechanisms, including those associated with third-party crediting schemes serving multiple markets and with deeper buffer pools to cover potential losses. **Cons** Administrator must be confident that mechanism can be effectively managed.
Natural Disturbances	Partner Jurisdiction and nested projects would be responsible for making up losses associated with natural disturbances that are significant and infrequent.	**Pros** Simple accounting that is not dependent on external buffer pool or other insurance mechanism. **Cons** Unfair to penalize participants for such losses, which are beyond their control. Facing such large liabilities, participants may either choose not to join a REDD+ program or walk away from their emission reduction policies and measures after such a loss, negatively affecting the atmosphere.

	The jurisdiction reference level would be adjusted to reflect changes in forest carbon density associated with significant increases or decreases in forest carbon stocks caused by natural disturbances or carbon fertilization.	**Pros** Does not penalize states for natural disturbances over which they have no control; but incorporates significant changes in forest carbon stocks that may occur into the calculation of emissions. **Cons** These real (natural) emissions would not be accounted for anywhere in the system, presenting possible lost opportunities for avoiding emissions. Requires specificity in defining the spatial extent of deforestation/degradation in the baseline. Also, (potentially frequent) adjustments to the baseline over time could create unhelpful uncertainty.
	Buffer pool would be responsible for making up losses associated with such natural disturbances.	**Pros** Maintains atmospheric integrity by fully accounting and compensating for such natural disturbances. If properly designed, the buffer mechanism would not unfairly penalize Partner Jurisdictions for emissions that have nothing to do with human activities within the jurisdiction. **Cons** Risk that buffer reserve could become bankrupt due to large scale natural disturbances and no longer function effectively. If improperly designed, could threaten the viability of the REDD+ program.

C. Recommendations

1. Partner Jurisdictions should develop and adopt mechanisms, such as buffers or insurance products, for robustly compensating reversals in years when emissions rise above the jurisdictional reference level.
2. Partner Jurisdictions should report all significant reversals to the cap-and-trade Administrator and prove that these have been compensated for appropriately.
3. Cap-and-trade Administrators should establish regulatory criteria to assess the eligibility of any proposed reversal monitoring and compensation mechanism.
4. Emissions from major natural disturbances should be addressed in ways that do not unfairly penalize Partner Jurisdictions or affected projects.

2.3.3.3 Double Counting

Double counting of GHG emission reductions occurs when credits (or other forms of formal recognition) are given more than once for the same reduction. There are three types of double counting that may be a concern for sub-national REDD+ programs: Crediting REDD+ emission reductions that are also being credited under separate voluntary or regulatory (project-based) offset programs; crediting sub-national REDD+ emission reductions that are also being credited under a national REDD+ program or initiative; and issuing credits to more than one entity for the same emission reductions within a sub-national REDD+ program, e.g., to both the jurisdiction and a nested project.

Several issues are addressed in this section including:

1. What legal provisions are required as part of a sub-national REDD+ system to establish clear ownership rights to emission reductions and prevent third parties from making unauthorized claims to those reductions? (See Legal Section in Chapter 2)

2. What are the current and anticipated national-level policies in Brazil and Mexico that could affect accounting for, and crediting and ownership of, sub-national REDD+ emission reductions, and how will sub-national accounting and credit issuance be reconciled with national level accounting?
3. How will the emission reductions achieved by different REDD+ policies and measures be accounted for and allocated to the entities responsible for their implementation? If nested projects are part of a sub-national REDD+ program, how will accounting and crediting at the project level be reconciled with emission reductions achieved at the jurisdiction-level? What should a REDD+ Partner Jurisdiction's policy be toward projects that are initiated prior to the development of an integrated accounting framework that reconciles project- and jurisdiction-level accounting?

A. Issue Context

Without clear rules and legal requirements, it is possible REDD+ reductions may be claimed by multiple parties. Individual landowners within a jurisdiction could, for example, try to negotiate offset sales with voluntary buyers without going through formal crediting mechanisms, and could therefore end up double-selling reductions that are also being accounted for under a formal REDD+ program. Most established voluntary offset programs have rules that would prevent landowners from receiving credit if the reductions they want to sell are being double counted in another regulatory or voluntary system. But it is possible that unscrupulous or uninformed landowners might try to negotiate bi-lateral offset deals outside of formal programs.[26]

A smaller risk is that there could be overlapping regulatory programs, e.g., if a regulatory offset program in some extra-national jurisdiction had rules for recognizing forestry offset projects located in a host state. Like voluntary programs, it can be expected that regulatory programs will have rules against double counting. The question becomes whether there may be conflicting legal claims that need to be sorted out.

Reconciling Sub-National and National REDD+ Programs

Both Brazil and Mexico are implementing or anticipating national-level REDD+ policies that may include crediting or other formal recognition of REDD+ reductions. Double counting will occur if credits are issued at a national level for emission reductions that are also being accounted for and credited under a sub-national program linked to California's cap-and-trade program. Partner Jurisdictions will have to work closely with national government agencies to ensure that their REDD+ programs are properly integrated with national efforts, and ensure that reductions for which sub-national REDD+ credits are issued are not also issued credits at the national level.

Sub-National Reconciliation, Including Reconciliation of Early Action Nested Projects

Any jurisdiction-level REDD+ program will need rules to account for emission reductions and appropriately allocate credits to parties responsible for achieving those reductions. It should be noted that the risk of double counting is avoided if REDD+ reductions are credited only at the jurisdiction level. If a REDD+ program combines jurisdiction- and project-level crediting, however, care needs to be taken so the jurisdiction and nested projects do not receive credit for the same reductions. In general, this will require accounting methods that reconcile project-level quantification with calculations of reductions achieved at the jurisdiction level, which may then be used to allocate credits according to the relative contributions of nested projects and jurisdictional measures. There are various options for designing nested REDD+ programs of this nature, but the details are beyond this scope of this document and its recommendations.[27]

However, one issue that may require attention is how to incorporate and reconcile REDD+ reductions achieved by projects that are initiated—and issued (voluntary) offset credits—prior to the establishment of a nested REDD+ accounting and crediting framework. To treat these projects fairly, and provide incentives for early action, it may be desirable for REDD+ Partner Jurisdictions to clarify whether and how they will allow them to receive official REDD+ credits once a formal REDD+ program gets going. This may require evaluating project-level methodologies and making an initial determination about the

level of crediting such projects will be eligible for (i.e., how many REDD+ credits may be issued for each ton of reductions quantified under project-level methodologies), and how long such grandfathered projects will have before being fully integrated within the state's nested REDD+ accounting and crediting framework.

B. Recommendations:

1. REDD+ Partner Jurisdictions should clarify through laws or regulation who may legally claim ownership of REDD+ emission reductions or removals.
2. REDD+ Partner Jurisdictions should work closely with national government agencies to ensure that their programs are recognized and properly integrated with national efforts if and when a national program is at a sufficiently advanced stage to allow integration. In the case that the national program is not yet in a position to integrate the jurisdictional program, it is recommended that the jurisdiction receive a letter of non-objection from the national government, to demonstrate awareness of the jurisdictional program, and eliminate the possibility of future double-counting.
3. If crediting will be allowed for nested projects, REDD+ Partner Jurisdictions must establish integrated accounting frameworks (including defining how emission reductions will be allocated between projects and the government).

2.3.4 Measurement, Monitoring, Reporting and Verification

An important element in any strategy to reduce greenhouse gas emissions is a system of measurement, monitoring, reporting and verification (MMRV) that ensures all parties involved are only credited for the actual emissions reductions they achieve. MMRV systems include collecting necessary data for quantifying and tracking changes in GHG emissions; providing accurate, regular, and reliable assessments of GHG emissions and relevant policies and measures; and verifying reports as accurate and comprehensive.

This section provides background, options and recommendations with respect to addressing measurement uncertainty, as well as effective monitoring, reporting and verification of emission reductions and removals.

Key issues addressed in this section include:

1. How should uncertainty about measurement and monitoring methods be managed and/or mitigated within the offset system?
2. What should be reported and how often should Partner Jurisdictions be required to report on emissions, and what basic principles should be used for reporting?
3. Should the Administrator prescribe a program for reporting and verification, or rely on validation of programs developed by Partner Jurisdictions?

A. Issue Context

To monitor changes in above-ground carbon stocks, including carbon losses through deforestation and forest degradation, and carbon enhancement through forest regrowth, restoration or tree planting, several types of information are required at the jurisdictional level: 1) the rate of change in forest cover; 2) the amount of carbon stored in the forest (carbon density in units such as tons of carbon per hectare); 3) the amount of carbon stored in the vegetation (and soil) that replaces the forest; and 4) the rate of carbon accumulation by recovering or planted forests. The most cost-effective and reliable approaches to estimating this information at the jurisdictional level combine field measurements and data provided by satellites, and where the technology is available, sensors mounted on airplanes. Satellites provide a convenient (and typically cost-effective) means to monitor changes in forest cover associated with deforestation, degradation and regrowth. These changes in cover can be used in conjunction with base

maps of forest carbon densities, and the density of carbon in the vegetation that replaces the forests, to estimate emissions.

In the simplest approach to estimating carbon fluxes from deforestation and forest degradation, a map of forest types is developed and the average carbon density of each type is applied to each forest type through measurements in field plots. The area of each forest type that is deforested or degraded is combined with average forest carbon density, using emissions factors, to estimate emissions. The Intergovernmental Panel on Climate Change (IPCC) broadly categorizes this approach as Tier I monitoring. Two higher levels of monitoring—Tiers II and III—allow for greatly increased accuracy using multiple inputs from field-based inventories, remote sensing (satellite and aircraft) and models.

Uncertainty

Uncertainty is inherent in any strategy for estimating emissions. Uncertainty must be managed within a REDD+ program to ensure both atmospheric integrity and fair compensation to Partner Jurisdictions for their success in lowering emissions. The system must define the maximum level of uncertainty that will be accepted in the determination of emissions reductions. Uncertainty in the estimates of change in forest cover and carbon stocks is both scale-and technology-dependent. At the jurisdictional scales of states, provinces and departments, the uncertainties are well understood. Critically, the overall jurisdiction-scale uncertainty declines as the area of the estimate increases. Given proper acquisition and use of satellite imagery, scientific research indicates uncertainties in deforestation and degradation monitoring of < 5% and < 10% respectively can be achieved. In practice, sub-optimal cloud cover, methodologies, and satellite availability is likely to push the uncertainty to the 5% and 10% levels for deforestation and degradation, respectively.

In terms of monitoring changes in carbon stocks, *deforestation* has proven to be the most straightforward with errors resulting from the combined effects of forest cover change errors (< 5%) and standing carbon stocks (< 10%). *Forest degradation* processes that substantially impact carbon stocks, such as selective logging and sub-canopy fire, are more challenging to monitor, but advances in space-based and airborne measurement technique have brought the uncertainties below 20%, even in very large jurisdictions. When recovery from non-forest to forest is present in the satellite record, it has proven straightforward to detect and monitor. Forest regrowth, where there are existing forests, is the most difficult change in forest carbon to remotely monitor.

Once the uncertainty surrounding emissions reductions estimates is understood, it must be managed within the REDD+ system. Two questions are significant: 1) Should uncertainty be ignored, or managed through an accounting discount (e.g., measurements with a given uncertainty would result in credits with a commensurate value discount)? and 2) Should there be an uncertainty threshold for inclusion in a REDD+ program (e.g., if you have greater than 10% uncertainty in your measurement of forest degradation, then you cannot

MMRV Case Study: Acre

As an example of mapping and monitoring capacity, the Government of Acre currently has two monitoring approaches for deforestation. The first one is through the PRODES methodology developed by the National Institute for Space Research (INPE). The PRODES has been the source of official data on deforestation estimates in the Brazilian Amazon since 1978. The method analyzes analog color images on a scale of 1:250,000, with the minimum area of 6.25 mapped. This approach allows the comparison between the states regarding their contribution to deforestation at national level. The second approach is through its own Central Unit of Geoprocessing (UCEGEO), which is responsible for monitoring deforestation annually at scale of the state. The UCEGEO has a detailed base map scale of 1:100,000, including forest typology, with a collection of satellite images that support the annual estimates of deforestation from 1988 to the present. In addition, UCEGEO is acquiring high-resolution images that will enable evaluating deforestation by property. The scale of work of UCEGEO allows monitoring at the state and local level to support public policies. Currently the government is in the process of improving the technology and capacity of UCEGEO to include the monitoring of carbon stocks and forest degradation, as well as the measurement of other environmental services.

receive credits for reducing forest degradation)? Question 2 has been previously addressed in the Scope section, and question 1 is addressed in the options table below.

Reporting and Verification

The accurate crediting of emissions reductions from the forest sector will rely upon a formal process for reporting the data collected in the measuring and monitoring process, and the methods used to collect that data, as well as a process for verifying the information and methodology. This document will not go into the details of a complete reporting and verification program. Instead, we will touch briefly on the general approach. The primary question addressed is whether the Administrator should define a set of procedures for reporting and verification, or allow the Partner Jurisdictions to design a reporting and verification system (or use a third-party program for such purposes), and simply validate those systems against the Administrator's quality requirements.

A robust reporting process for REDD+ is important for ensuring accurate accounting of emissions and credits; however, the reporting structure should be designed in a way that does not place too great a burden on the Partner Jurisdictions, or on the Administrator. While having the Administrator design a specific program for MRV would ensure a defined level of rigor in these processes, this does not allow for jurisdictions to tailor their processes to their specific circumstances. Additionally, for jurisdictions that are already in the process of developing these programs, it may place an unnecessary burden on them to require them to develop new procedures according to the prescriptions of an Administrator. Instead, it is recommended that the Administrator establish a validation procedure that validates a jurisdiction's MRV programs in advance of the implementation of the program. The Administrator would then provide guidance to jurisdictions regarding the basic principles to which these programs will need to adhere.

Whatever approach is adopted, a jurisdiction's measurement and monitoring methodology and data should be developed and reported in a manner that is transparent, consistent and open for public scrutiny. It should also have the rigor and integrity of third-party verification.

The monitoring methodology and estimates of emission reductions and carbon enhancements should be documented in a way that is: a) transparent and easily accessible to the public; and b) sufficiently detailed to permit thorough technical and scientific evaluation. The documentation should include a rigorous evaluation of the accuracy of the estimates. If credits are also being issued and accepted into The Administrator's program at a nested project level, data would need to be made available and reported at this scale as well. If any third-party registries are being used by the Partner Jurisdictions, those registries should be publicly viewable, and/or provide regular reports that are available to the public. Partner Jurisdictions should report this information at frequent, regular intervals.

To facilitate identification of sources of emissions in the future (such as natural disturbances), emissions and removals should be reported separately.

The initial inventory of forest carbon and estimates of emissions, emissions reductions and carbon enhancements should be verified by an independent technical team as a precondition of crediting, with verification occurring at the jurisdiction-wide scale and the nested project scale. To the extent third-party programs are used to verify emission reductions, those programs should undergo periodic audits to evaluate the performance and adequacy of those programs. In addition to the initial assessment, subsequent verification of the measuring methodology should occur at intervals no longer than every five years.

B. Options

ISSUE	OPTIONS	PROS AND CONS
Managing Uncertainty	Uncertainty is ignored, and average values are assumed to represent changes in emissions.	**Pros** Allows states and provinces to be issued the highest number of credits. Simple. Decreases risk of underestimating actual emissions reductions. **Cons** Some jurisdictions get more credits than they deserve while some would receive fewer credits than they deserve. Can compromise GHG program since total credits issued could exceed real emission reductions generated. Does not provide incentive for increasing accuracy to extent feasible.
	A static correction is applied. For example, fluxes could be defined at 10% below the average.	**Pros** Simple. Reduces risk of jurisdictions issuing more offsets than they deserve (compared to Option 1 above) **Cons** As the system grows, the total number of offsets issued is lower than the real emissions reductions, and jurisdictions would issue less offsets than they deserve. Hard to determine appropriate discount factor.
	Emissions reductions are determined using uncertainty analysis, setting a minimum level of uncertainty with a sliding scale discount that decreases with a corresponding increase in certainty.	**Pros** Creates an incentive to improve the accuracy of emissions estimates. Provides a convenient mechanism for determining what types of emission reductions can qualify for credits; emission reductions with unacceptably high levels of uncertainty would automatically be excluded. **Cons** Complex. Could discourage entry into the system by discouraging those with uncertain carbon and/or emissions inventories.
Reporting and Verification	The Administrator specifies the details of a Partner Jurisdiction's methodology for reporting and verification.	**Pros** Decreases burden on Partner Jurisdiction. Provides ultimate control to Administrator. **Cons** Increases burden on Administrator.

Partner Jurisdictions develop their own methodology for reporting and verifying, or use existing methodologies from third-party programs. The Administrator provides guidance for the program, and validates the methodology in advance of program implementation.	**Pros** Reduces burden on Administrator. Allows flexibility to accommodate efforts already undertaken by Partner Jurisdictions. **Cons** Increases burden on Partner Jurisdiction.

C. Recommendations

These recommendations concern measurement, monitoring, reporting and verification at the jurisdiction level and are intended to be executed by the Partner Jurisdiction. It is assumed that compatible MMRV would also occur within a jurisdiction at the nested project level.

1. Measurement uncertainty should be managed by establishing a sliding scale discount, whereby higher levels of uncertainty would result in fewer emission reductions being credited, thus providing a strong impetus for improvements in measurement and monitoring. An uncertainty threshold, based on what California considers acceptable, could be established above which no credits would be issued.
2. Reporting should be fully transparent, with sufficient information provided on methods and uncertainty estimation to permit full, peer-review evaluation and verification.
3. Validation of jurisdiction methodology for measuring and reporting[28] should occur at the outset of the program, and periodically thereafter.
4. As part of the jurisdiction's methodology for measuring and reporting, independent, third-party verification of GHG reductions should occur as a precondition of crediting and at intervals of no more than five years thereafter. Verification would be conducted according to the methodology outlined in the validation at the start of the program.

2.4 Development and Recognition of Safeguards[29]

Environmental and social safeguards have moved in recent years from the periphery to the center of the debate on REDD. The enhanced attention to safeguards stems from the strengthening empirical case[30] that clear land rights and secure resource tenure, effective consultation processes, and the development of progress indicators relevant to local needs are necessary pre-conditions for the ultimate success of REDD+ programs. Developing and implementing high-quality safeguards is one of the most cost-effective investments government can make in ensuring permanence and additionality of reductions and removals associated with jurisdictional REDD+ programs. Moreover, while the primary goal of jurisdictional REDD+ programs is to achieve real reductions in greenhouse gas emissions from the forest sector, well-designed REDD+ programs with appropriate safeguards can generate additional social and environmental benefits and provide a viable pathway to sustainable, equitable low-carbon rural development.

Both Chiapas and Acre are addressing social and environmental safeguards as a core component of the development of their REDD+ programs. Acre, in particular, is the acknowledged global leader in the development of safeguards as part of a jurisdictional REDD+ program, drawing from a range of mechanisms in developing its approach to safeguards, including extensive consultations with national, state, and local civil society, the farm sector, and indigenous peoples.[31] Acre was also one of the first jurisdictions to adopt the REDD+ SES standards and has been deeply involved in the development of that effort.[32] Chiapas has recently initiated a process to engage relevant stakeholders in discussing applicable safeguards as it develops its REDD+ program. Both states also work closely with their respective national government agencies responsible for REDD+ and civil society groups.

This section outlines options for Partner Jurisdictions regarding the design, adoption, implementation, monitoring and verification of safeguards in the development of jurisdictional REDD+ programs, and the corresponding options for California as it considers how to include social and environmental safeguards requirements as part of its regulations for sector-based REDD+ offsets and as a condition for any potential linkage with a REDD+ program in a Partner Jurisdiction. It thus approaches safeguards from both sides of a potential linkage, focusing on the role of Partner Jurisdictions in developing and implementing safeguards, as well as the role played by regulatory authorities in GHG compliance systems, such as that being developed in California, in conditioning acceptance of REDD+ credits on the demonstration that specific safeguards have been adopted and are being implemented.

By working with progressive partners such as Acre, Chiapas, and with other Partner Jurisdictions committed to developing high-quality safeguards, California can set a high bar for jurisdictional REDD+ programs, further bolstering its reputation as an early adopter of cutting-edge green programs that include strong commitments to public participation and sustainable development. California's endorsement of a global best-practice safeguards standard, such as the REDD+ Social and Environmental Standards, as a key requirement for any jurisdictional REDD+ program that it would consider linking with would send a strong signal that REDD+ programs will not be eligible to access GHG compliance market opportunities unless they adhere to such standards. This would further reinforce the ability of such programs to deliver real, additional, permanent, and enforceable emissions reductions and removals.

Key questions addressed in this section include*:*

1. How should partner jurisdictions develop a robust safeguards system as part of their jurisdictional REDD+ programs?
2. Should California develop its own, original safeguards framework and design a system for managing its implementation as part of any regulations for sector-based offsets, or should it rely on existing best-practice standards and condition any linkage with Partner Jurisdictions (and any acceptance of REDD+ offsets into its program) on adoption and demonstration of such best-practice social and environmental safeguards?
3. How should California recognize the safeguards programs already designed in Partner Jurisdictions, in particular, those of the State of Acre as part of any potential linkage?
4. How should the implementation of safeguards in Partner Jurisdictions be monitored and reported to the Administrator?
5. How should grievances and non-compliance be handled in a safeguards system?

A. Issue Context

The Use of Safeguards

REDD+ safeguards do not have any explicit precedent in California law.[33] In writing rules for implementation of AB 32 programs, the California Air Resources Board (ARB) is required, to the extent practicable, to consider overall societal benefits.[34] The California Environmental Quality Act (CEQA) provides one context for how California might consider some of these issues in its engagement with potential Partner Jurisdictions on REDD+, but CEQA does not use the language of safeguards, rather that of public participation.[35] Despite this, to be consistent with AB 32, and as a contribution to the emerging global norm regarding the use of social and environmental safeguards in development projects and practices, California should condition acceptance of REDD+ offsets on demonstration by Partner Jurisdictions that appropriate safeguards have been met. Given the precedent-setting nature of California's efforts in this area, existing state and federal law does not provide much guidance regarding how California can (much less should) approach this issue in terms of specific regulations.

As the term safeguards itself implies, their primary function is to prevent negative social or environmental changes associated with REDD+ programs and projects. But REDD+ has the potential to bring positive

change as well, and it is important that such co-benefits are incentivized through forest carbon offset policies and measures under the Administrator's cap-and-trade scheme. This enhanced benefits approach is consistent with current UNFCCC REDD+ safeguards—as adopted by Parties to the UNFCCC in the Cancun Agreement—which include a requirement for actions to "…enhance other social and environmental benefits."[36] By ensuring that compliance credits embed such co-benefits, the Administrator would also satisfy a key interest of investors and offset buyers, who generally are strongly attracted to the social and environmental benefits associated with REDD+ policies and measures.[37]

For example, Acre has designed its state-level REDD+ program around the idea that it can and will provide co-benefits for all those who develop actions to promote conservation, preservation and recovery of forests and their environmental services. To achieve this goal, and considering that many of these policies and measures can also bring risks, especially for indigenous peoples and traditional populations, Acre adopted the socio-environmental principles and criteria of the REDD+ Social and Environmental Standards (REDD+ SES) initiative for the design and implementation of its program, and developed indicators for performance verification. After analyzing the convergence with the Brazilian Social and Environmental Principles and Criteria, the indicators were developed under a participatory process, through meetings, training workshops, and consultation with different segments of the society (indigenous peoples, resource extractors, rural producers and women), including the Councils of environment, forests and sustainable rural development. Finally, the result of the consultation process was assessed and approved by the multi-stakeholder State Commission for Validation and Monitoring of SISA. The result also will be adopted through regulation for the monitoring and verification of social and environmental performance of the Carbon Program within the Incentives for Environmental Services system, and as a reference for analysis and approval of projects nested in this program.

California regulators engaged in any review of proposed safeguards in Partner Jurisdictions should take note of the serious commitment of governments such as that in Acre to enhanced social and environmental benefits as a core element of their REDD+ program, and the strong positions taken by civil society in such jurisdictions with respect to prior informed consent, rights to information, and robust co-benefit mechanisms. Guidance for other jurisdictions can also be found in the Design Recommendations document of the Governor's Climate and Forests (GCF) Task Force,[38] which calls upon GCF partner jurisdictions to draw upon existing efforts to develop robust safeguard systems, as a set of recommendations to all jurisdictions regarding the future use and implementation of safeguards.

Who Develops Standards for Safeguards, and at What Scale?

Safeguards can be developed and implemented at the scale of individual, nested projects and at the scale of the entire jurisdiction. At the jurisdictional scale, safeguards should be designed and implemented as part of the overall REDD+ program, tailored to the specific risks and opportunities associated with REDD+ in the specific jurisdiction. As demonstrated by the Acre experience, the key safeguards principles and criteria and the resulting "safeguards system" are built into the policies, laws, regulations, and overall institutional framework that support the state's REDD+ program. To be effective, such a system must include a grievance and redress mechanism for stakeholders as well as system for monitoring and reporting on safeguards implementation. In jurisdictions that include nested projects, safeguards should also be incorporated into project design and implementation to protect against harm and to ensure the generation of verifiable benefits for local communities, biodiversity, and ecosystem functions. (Project-level safeguards are discussed in the Appendix.)

To reduce the transaction costs for California and Partner Jurisdictions in the development and implementation of high-quality social and environmental safeguards, the ROW recommends that any rules, guidelines, or linkage arrangements dealing with safeguards should recognize and enhance complementarities with existing national and state-level legal and regulatory frameworks, and with safeguards programs already under development. This includes taking into account any international obligations and agreements that are viewed as binding on relevant national governments. Any provisions on safeguards that are recognized or adopted by the Administrator as part of a broader set of provisions recognizing REDD+ under its sector-based crediting program should be clearly communicated, with guidance regarding implementation and appropriate monitoring, reporting and verification requirements.

Where possible, safeguards should be developed in Partner Jurisdictions in a manner that captures the overall efficiencies associated with jurisdictional approaches to REDD+.

Although safeguards have historically been used in project settings, the incorporation of safeguards as part of jurisdictional REDD+ programs has made significant progress over the last several years. There are now several important precedents upon which California and Partner Jurisdictions can look to in developing an overall approach. These include:

- guidance from the UNFCCC Cancun Agreement Annex I;
- safeguards initiatives of the UN-REDD program including the Social and Environmental Principles and Criteria (SEPC)[39];
- the Common Approach to safeguards developed under the World Bank's Forest Carbon Partnership Facility (FCPF), including the Strategic Environmental and Social Assessment (SESA) and the Environmental and Social Management Framework;
- the REDD+ Social and Environmental Standards (SES) initiative[40] that is convened by CARE International and The Climate, Community & Biodiversity Alliance (CCBA);
- the Climate, Community & Biodiversity Standards developed by the CCBA; and
- national standards, such as those developed through Brazil's multi-stakeholder process, and similar efforts that are now taking shape in Mexico and Indonesia.

None of these existing guidelines or standards have yet been incorporated into a GHG compliance system (at any level) and, therefore, any linkage between California and a Partner Jurisdiction would set important precedent and provide a critical proof-of-concept opportunity for the design, implementation, and monitoring, reporting and verification (MRV) of safeguards as part of a compliance-grade jurisdictional REDD+ program.

Although California has the option of developing its own set of social and environmental safeguards as part of any regulations for sector-based REDD+ offsets, it is strongly recommended that California use already-established systems for this purpose. Developing robust social and environmental safeguards with appropriate stakeholder input and buy-in is neither quick nor easy. In fact, the most advanced standards frameworks in use today, such as the REDD+ SES initiative, are the result of years of intensive development, including a major commitment to consultations with diverse stakeholders.[41] The on-the-ground experience and reputation of the organizations involved in standards-setting is extremely important for the quality and effectiveness of the resulting standards. Even the jurisdictions that have devoted the most staff time and attention to developing a robust safeguards program are still in the early stages of actually implementing those safeguards, and thus there is still much opportunity for learning and sharing.

Defining the safeguards is a necessary first step in the process; designing appropriate approaches to their implementation is a second step. For a demand-side jurisdiction such as the Administrator that is considering allowing REDD+ credits into its GHG compliance system, monitoring, reporting and verification of safeguards implementation will be critical. Doing so in a manner that does not run afoul of legal (i.e., Constitutional) restrictions and does not overwhelm the regulatory authorities in charge of the system will likely require reliance on some form of independent, third-party auditing and MRV.

The REDD+ Social & Environmental Standards (SES) initiative—convened by a number of leading international environment and development non-governmental organizations (NGOs), and validated through intensive work with national and subnational governments, indigenous groups, other forest dependent stakeholders, and the private sector—includes a mechanism for assessing jurisdictional REDD+ programs.

The REDD+ SES provide a globally recognized set of principles, criteria and a framework of indicators for individual REDD+ Partner Jurisdictions to define their own benchmarks and performance indicators based on the REDD+ SES framework, their own legal and policy framework and stakeholder consultations.

REDD+ SES enjoys strong legitimacy and increasing acceptance among those governments intending to demonstrate a high degree of commitment to sustainable economic development and community and environmental benefits as part of their implementation of REDD+ programs. REDD+ SES provides clear guidelines for incorporating local concerns, and Acre is leading the effort to put the REDD+ SES principles into state administrative practice, along with the outputs from national multi-stakeholder processes, and from consultations conducted in the state.

Accordingly, the ROW recommends that subnational governments seeking to develop compliance-grade REDD+ programs should use the REDD+ SES to the extent feasible to design and implement their robust safeguards provisions as part of their REDD+ programs.

Likewise, on the demand side, advocating for the adoption of safeguards that are consistent with REDD+ SES in partner jurisdictions and, possibly, conditioning any linkage on such adoption, will help to ensure that any REDD+ credits coming into California have been generated in Partner Jurisdictions that adhere to high-quality safeguards. The ROW believes that promotion and/or adoption of safeguards consistent with REDD+ SES will be welcomed by civil society groups in California and in Partner Jurisdictions. One option would be for the Administrator to stipulate *ex ante* its intent to link only with jurisdictions that have adopted safeguards that are consistent with REDD+ SES, and to require independent, third-party confirmation of adoption and implementation of such safeguards before concluding any sort of linkage arrangement. It is premature to discuss the specific requirements of the linkage arrangement, other than to note here that safeguards should be integrated into the overall MRV approach.

A decision by California to link with a REDD+ Partner Jurisdiction also provides an important opportunity for innovation regarding all aspects of the design and implementation of jurisdictional REDD+ programs, including the safeguards elements, given that no binding agreement has been reached by the UNFCCC regarding the nature and scope of REDD+ in international climate change mitigation efforts. Thus, the Administrator along with any Partner Jurisdiction that it decides to link with will have considerable leeway (and influence) with regard to the design and implementation of social and environmental safeguards as part of a compliance-grade REDD+ program. In the event that the UNFCCC process does generate a binding legal treaty on climate change that includes REDD+ and/or takes a binding decision on REDD+, a review of Administrator and Partner Jurisdiction programs for use of safeguards may be necessary; but the ideas presented here are consistent with the UNFCCC Cancun Agreement's safeguards—and that Annex, adopted by parties in the convention framework, is likely to persist as the core articulation of safeguards at the international state-to-state level.

Reporting on Safeguards

A monitoring and reporting mechanism is essential for REDD+ states to track compliance with environmental and social safeguards and demonstrate performance of GHG compliance systems such as that being developed in California. Chiapas and Acre are developing their own reporting systems, and California should condition any linkage and acceptance of REDD+ credits on the adoption of robust MRV provisions for safeguards in any Partner Jurisdictions, including independent third-party verification of any assessments of the design and implementation of safeguards in partner jurisdictions. In addition, It is important that tangible benefits equitably flow to those individuals and entities responsible for the reductions, and that the flow of benefits should be tracked and reported transparently.

Addressing Grievances and Safeguards Non-Compliance

California need not create a separate grievance mechanism to review implementation of safeguards by partner jurisdictions. Instead, California should rely on the adequacy of national and subnational grievance mechanisms, the establishment of which is required as part of REDD+ SES standards. Existing California law does not provide for any existing body to monitor and comment on the implementation of activities in another jurisdiction, and that creating such an oversight function might conflict with Supremacy Clause doctrine of the U.S. Constitution, as well as with recent Supreme Court findings.[42]

However, California should require that information be made available about any and all accountability and legal recourse mechanisms that would come into play in the case of the violation of safeguards. Because California seeks an iron-clad 'do no harm' guarantee with respect to its use of credits,

California should ask for detailed evidence of an 'appeals' process or grievance process operating at the subnational level in Chiapas and Acre as part of that linkage agreement.

For both 'carbon MRV' as well as the implementation of safeguards, linkage agreements should contain a suspension provision to deal with cases of serious non-compliance.

Options

ISSUE	OPTIONS	PROS AND CONS
Extent of Safeguards	Seek to avoid social and environmental harm	**Pros** An understood baseline; reflected in Cancun Agreement Annex I; consistent with international law. **Cons** Provides few development benefits, and is perceived as a weak standard.
	Promote the generation of multiple benefits from REDD+ policies and measures	**Pros** Often Necessary for longer-term permanence of GHG reductions; supports development objectives of UNFCCC, and is consistent with the enhanced benefits approach laid out in the Cancun agreement. **Cons** More difficult to measure, and more difficult to achieve.
Who develops safeguards	The Administrator develops its own, original safeguards framework and designs a system for managing its implementation.	**Pros** Demonstrates leadership; high degree of ownership; could be adopted by Western Climate Initiative. **Cons** Labor- and time-intensive, may not garner international legitimacy.
	The Administrator relies on existing best-practice standards.	**Pros** Existing systems have global support/reputation; they provide implementation "road maps" for Partner Jurisdictions; proven and already deemed acceptable to civil society and business. **Cons** Difficult to customize if the Administrator has particular/different needs/concerns.
How should indicators be addressed?	The Administrator prescribes indicators for safeguards.	**Pros** Allows for direct comparability between Partner Jurisdictions. **Cons** Labor-intensive and may be hard for the Administrator to understand and respond to unique social and environmental conditions in Partner Jurisdictions.

	Indicators should be developed by the Partner Jurisdiction, for review against set standards.	**Pros** Increases ownership by governments; allows for customization of particular standards relevant to local situations. **Cons** Comparability can be more challenging.
How should grievances be addressed?	No mechanism.	**Pros** Easy. **Cons** Unacceptable to civil society, contrary to UNFCCC decisions and international law.
	California designs and pursues.	**Pros** Quality control; speaks to values of Californians; provides access to a high-quality review. **Cons** Not currently supported in statute. Hard to manage and oversee.
	Partner Jurisdictions design a grievance mechanism and pursue cases as needed.	**Pros** More consistent with international practice; reduces distance between complaint and redress; can be adjudicated through national legal systems, where necessary. **Cons** National/subnational grievance mechanisms can be poorly supported and unpopular with public officials.

C. Recommendations

1. California should condition acceptance of REDD+ credits and any linkage arrangement on sufficient demonstration by a Partner Jurisdiction that the safeguards provisions in its REDD+ program are consistent with all the REDD+ safeguards found in Annex 1 of the UNFCCC Cancun Agreement (including the enhanced benefits approach), the guidance on safeguard information systems in UNFCCC 12/CP.17, and future safeguards developments under the UNFCCC, and emerging best-practice standards such as the REDD+ Social & Environmental Standards (SES).
2. California should set a best-practice global standard by adopting REDD+ safeguard standards that specify how Partner Jurisdictions will satisfy and operationalize these safeguard requirements, including incorporating a monitoring and reporting mechanism to transparently provide information, updated on a regular basis, to all relevant stakeholders. These reporting mechanisms will be stipulated in individual linkage arrangements.
3. Individual Partner Jurisdictions should define their own benchmarks and performance indicators for implementing robust social and environmental safeguards following the guidelines on the country-level interpretation and application of the REDD+ SES.
4. Partner Jurisdictions should recognize and respect the rights of indigenous peoples and local communities in their REDD+ programs, including application of the principle of free, prior, and informed consent based on the culturally-appropriate decision making process of affected communities, as elaborated under global best practice safeguards standards such as REDD+ SES.

5. Partner Jurisdictions should develop (and effectively communicate to relevant stakeholders) adequate grievance mechanisms, in accordance with the REDD+ SES guidance,[43] and make available information about these mechanisms, including their procedures, oversight and accessibility. In addition, Partner Jurisdictions should report on grievances received, and how they have been responded to and resolved, including any redress/remedy.
6. Partner Jurisdictions should monitor performance against their defined safeguards benchmarks and performance indicators, in accordance with the REDD+ SES guidelines, and submit independently verified reports prior to each issuance of credits demonstrating how their REDD+ program safeguards have been addressed and respected, and how grievances have been resolved in a timely manner following the Partner Jurisdiction's defined procedures.
7. Linkage arrangements should contain a suspension provision to deal with cases of serious non-compliance that may be triggered if the provisions on independently verified reports on safeguards and timely resolution of grievances are not met.
8. Partner Jurisdictions should require that all nested projects—if nested projects are used—be independently validated and verified using best practice social and environmental standards, such as the Climate, Community & Biodiversity Standards.

Section 3: Legal Frameworks & Linkage Options

3.1 Summary of Issues and Recommendations

Establishing provisions within the California cap-and-trade regulations to govern the acceptance of REDD+ offsets from foreign jurisdictions implicates a host of legal issues for California as well as for any foreign jurisdictions that might decide to link with the California system. Because Acre, California, and Chiapas all operate within larger federal systems of government, careful attention must be paid to federal statutory and constitutional constraints on any effort by these states to link their emerging GHG mitigation efforts. Needless to say, this is a dynamic and relatively novel area of law that implicates multiple legal systems at multiple levels.

This section summarizes the basic legal issues that California, Acre, and Chiapas must confront in designing and linking their respective programs. From the California perspective, there are state and federal legal issues (including federal constitutional constraints) on both the form and substance of any particular linkage arrangement as well as on the design of provisions to regulate the nature and flow of offset credits from activities in foreign jurisdictions. Similarly for Acre and Chiapas, various federal and state laws (including their respective federal constitutions) determine whether and how these jurisdictions may link their programs with the California cap-and-trade system.

Notwithstanding the specific legal constraints confronting efforts to link sub-national GHG compliance systems, it is important to recognize that each of these states, by virtue of their participation in a federal system, has considerable latitude in designing their programs and pursuing linkages with foreign jurisdictions. In the California context, although the relevant legal doctrines are not entirely clear, there appear to be no legal "show stoppers" confronting efforts by ARB to design provisions that would allow international sector-based offsets to be accepted into the California cap-and-trade program from activities in foreign jurisdictions. In fact, the most important legal hurdle to any such linkage is likely to be the recently enacted provisions that require the Governor of the State of California to make certain findings before any such linkage can proceed.[44]

Likewise, there appear to be no prohibitions under current Brazilian law that would preclude Acre from linking (in the sense described in section 3.1.1) its state system of environmental services to GHG mitigation programs in other jurisdictions (foreign or domestic), although the question of whether and under what conditions a state can issue emissions reduction credits for use as offsets in foreign GHG compliance markets is currently being debated in Brazil. Finally, Mexican states also appear to have considerable leeway under Mexican law to design their own subnational GHG mitigation efforts and link those efforts with activities and programs in other jurisdictions, but these are issues of first impression in that country as well.

The rest of this section discusses the key issues and recommendations associated with linkage, enforceability, and some of the legal issues associated with rights, tenure, and safeguards in the context of jurisdictional REDD+ programs. In the future, we will be providing brief overviews of the relevant legal frameworks for Acre, California, and Chiapas respectively. As with the rest of this document, this section may be updated and revised pending new legal developments and in light of comments received from stakeholders.

3.1.1 Linkage

The term "linkage" can be misleading, and is used here to refer in a generic sense to any effort, of whatever form, to coordinate activities across multiple sub-national jurisdictions in a manner that will allow GHG reductions in one or more of those jurisdictions to be used for compliance purposes in other partner jurisdictions. More specifically, as defined under California law, "linkage" means "an action taken

by the State Air Resources Board or any other state agency that will result in acceptance by the State of California of compliance instruments issued by any other governmental agency, including any state, province, or country, for purposes of demonstrating compliance" with the California cap-and-trade program.[45] In order for such a linkage to proceed, ARB must notify the Governor of its intent and the Governor, acting in his or her independent capacity, must find that (1) the jurisdiction with which the state agency proposes to link has adopted program requirements for GHG reductions, including requirements for offsets, that are equivalent to or stricter than those required under the California cap-and-trade program; (2) under the proposed linkage the State of California can enforce the provisions of its cap-and-trade program and related laws against any entity subject to regulation under those statutes and against any entity located within the linking jurisdiction to the maximum extent permitted under the U.S. and California Constitutions; (3) the proposed linkage provides for enforcement of applicable laws by the state agency or by the linking jurisdiction of program requirements that are equivalent to or stricter than those required under the California cap-and-trade program; and (4) the proposed linkage shall not impose any significant liability on the state or any state agency for any failure associated with the linkage.[46]

While these provisions were developed in response to the ongoing effort by California to link its cap-and-trade program with a similar program under development in the Canadian province of Quebec under the auspices of the Western Climate Initiative (WCI), they also appear to govern any direct effort to link a subnational jurisdictional REDD+ program with the California cap-and-trade program and, accordingly, must be incorporated in any effort to pursue such a linkage.[47] To that effect, given the substantive requirements regarding program stringency and enforceability that must be included in the findings issued by the Governor of California before linkage can proceed, any prospective partner jurisdiction that seeks to link with California will need to design its program accordingly.

In addition to these state-level provisions regarding linkage, there are restrictions under the federal constitutions of Brazil, Mexico, and the United States on the form and substance of any such linkage between foreign subnational jurisdictions. Details regarding such restrictions are provided in sections 3.2, 3.3, and 3.4 below. In sum, any linkage arrangement that operates as a binding agreement or resembles a treaty as understood under public international law would run afoul of constitutional provisions in Brazil, Mexico, and the United States prohibiting states from entering into such agreements. More generally, the more formal the arrangement (i.e., something that looks like a formal "compact" as that term is understood under U.S. law), while not necessarily prohibited, could raise federal constitutional issues in the U.S. regarding foreign compacts. Finally, any such linkage will need to be constituted in such a manner so as not to impinge upon exclusive federal authority over foreign affairs and international commerce in these countries.

The simplest path forward in this context is a non-binding Memorandum-of-Understanding (MOU) between the relevant jurisdictions that provides for mutual recognition of the substantive elements, procedural requirements, and institutional design of REDD+ programs in Partner Jurisdictions on the one hand and the relevant California regulations regarding international sector-based REDD+ offsets on the other. The MOU would provide that the individual states (the parties to the MOU) would proceed with rulemakings (and new legislation if necessary) in their respective jurisdictions to adopt the relevant regulations necessary to implement the various provisions identified in the MOU. Upon entry into force of the relevant regulations in each jurisdiction and appropriate verification, credits issued for verified emissions reductions under the partner jurisdiction's REDD+ program (i.e., Acre's program) would be deemed eligible for conversion into California compliance instruments (offsets) for use by regulated entities in California.

An alternative approach would involve "indirect" linkage through a third-party offsets provider or standards organization such as ACR, CAR or VCS or through an independent organization formed to facilitate such linkage such as WCI, Inc. This approach would likely also require some form of overarching MOU between the relevant jurisdictions to specify the conditions and requirements for eligibility, but each jurisdiction (e.g., California and Acre) would also engage directly with the relevant third-party organization. On the "supply side," for example, the REDD+ partner jurisdiction would enter

into an agreement with a particular third party organization wherein the state would agree to establish certain program and performance requirements and, upon demonstrating such performance, would issue emissions reduction credits under its state REDD+ program that would be eligible for conversion into the particular offset currency used by the third party organization.[48] On the "demand side," California would enter into an agreement with the same third party organization specifying that certain offset credits issued by this organization that meet the requirements of California's sector-based REDD+ offsets provisions would be eligible for conversion into California compliance instruments for use by California regulated entities. Thus, to follow the example though, some portion of REDD+ credits issued under Acre's state program would be converted into the relevant offsets currency under the third party program, and those credits would then be eligible for conversion into California compliance instruments.

3.1.2 Enforceability

All offsets accepted into the California compliance market are required by AB 32 to be "enforceable."[49] The "linkage findings" that the Governor must make before any linkage can proceed also require specific findings regarding enforceability under any linked program. Any partner jurisdiction that is interested in linking its program with the California cap-and-trade system will therefore need to demonstrate the requisite level of enforceability under its program. To that effect, a decision by California and Quebec to move forward with a linkage of their cap-and-trade programs should provide valuable experience and guidance on how California will approach this issue of enforceability in partner jurisdictions. Given that many jurisdictional REDD+ programs already include liability and enforcement provisions regarding zoning restrictions, logging, forest management, and land use generally, this should not pose a significant challenge for partner jurisdictions in the REDD+ context.

California has also adopted certain liability provisions for invalidated offsets under its own domestic offsets program, including a provision that imposes liability on forest owners for invalidated offsets generated from domestic forest offset projects.[50] This provision will not work for international sector-based REDD+ offsets, as California will have difficulty enforcing against forest owners in foreign jurisdictions and because the reductions and removals associated with jurisdictional REDD+ programs are not necessarily tied to any specific project or particular area of forest as they are in the project context.

But the general background liability rule that California has adopted for its offsets program (what is sometimes referred to as "buyer liability"),[51] under which regulated entities are liable for invalidated offsets that they have tendered for compliance, provides a fairly simple way to ensure enforceability of international offsets from jurisdictional REDD+ programs. If REDD+ offsets tied to credits issued by a partner jurisdiction were invalidated for whatever reason, the buyer liability provision would kick in to make the system whole by requiring regulated entities that tendered such offsets for compliance purposes to replace the invalidated offsets with other compliance instruments as specified in the regulations.

Although this provision effectively solves the enforceability challenge associated with international sector-based offsets from REDD+ programs from the standpoint of the California cap-and-trade system, it obviously creates strong disincentives for regulated entities to use REDD+ offsets unless they can find ways to mitigate or transfer the attendant liabilities. One way to soften the effect of this provision would be to establish a buffer mechanism that would provide a first tranche of replacement instruments for invalidated REDD+ offsets under certain conditions. Such a buffer could be constructed so that it provided up to a certain absolute amount or a certain percentage of invalidated offsets in the case of specified circumstances. Buyer Liability would continue to operate as specified above and would apply in cases where the credit buffer was unavailable or insufficient to maintain the integrity of the system.

Regardless of whether a buffer mechanism is combined with the buyer liability provision, regulated entities will almost certainly need to find means to transfer some or all of their liability for any REDD+ offsets subject to future invalidation through contractual arrangements with the relevant REDD+ program or through insurance or other means. Contracting directly with the government of a Partner Jurisdiction could be problematic (on both sides). But there are other potential institutional arrangements that could serve to manage the potential liabilities associated with invalidated offsets tied to a jurisdictional REDD+ program. Acre, for example, has created a public-private company as part of its

overall REDD+ program that is designed to engage directly with various market actors and might be able to assume some or all of such liability through commercial arrangements with buyers of REDD+ credits issued under the Acre program. The success of such an arrangement (or other alternative arrangements) in managing buyer liability could be crucial to the commercial viability of sector-based offsets from jurisdictional REDD+ programs.

3.1.3 Rights, Tenure & Safeguards

Recognition and respect for the rights of indigenous peoples and local communities to lands, territories and resources are crucial to the long-term success of any REDD+ program and the integrity of any emissions reductions achieved under such programs. This applies to both statutory and customary rights and is a core principle of global best-practice safeguards such as the REDD+ SES initiative discussed in section 2.4 above. Well designed jurisdictional REDD+ programs can be positive forces for enhanced recognition and protection of resource rights, and a decision by California to condition any linkage between its cap-and-trade program and a jurisdictional REDD+ program on the adoption and implementation of global best-practice safeguards can serve to further enhance the overall performance accountability of the jurisdictional REDD+ program.

While it is critically important that these issues be addressed in the context of emerging state or provincial REDD+ programs and while it is imperative that appropriate safeguards be adopted and enforced to ensure that the rights and interests of local forest dependent communities are protected and, where possible, strengthened in the development of REDD+ programs, any effort to clarify land tenure and resolve land ownership disputes as part of such a process, particularly in jurisdictions with complex layers of customary land rights, will need to be undertaken with extreme care so as not to create perverse incentives that result in land grabbing or other forms of exclusion. In some circumstances, resolution of land tenure disputes and conflicts over land title claims could exacerbate existing inequalities and result in additional restrictions on access to land and resources. Robust safeguards that ensure free prior informed consent, participation, and protection of rights and interests should therefore be institutionalized in the design and implementation of jurisdictional REDD+ programs and the legal frameworks that support such programs as promoted by global best-practice initiatives such as REDD+ SES.

Although the incorporation of such safeguards and other protections are ultimately issues of domestic law (federal and state) in partner jurisdictions and although California has no authority to *impose* any particular legal requirements in this respect on its partner jurisdictions, California can exert important influence over these domestic processes by choosing to link only with high-quality programs that have adopted and implemented such safeguards systems. In doing so, California can set a high bar regarding what will be expected from jurisdictional REDD+ programs seeking to link with existing and emerging GHG compliance markets.

With respect to specific ownership rights to the emissions reductions or removals achieved under a jurisdictional REDD+ program (what are sometimes referred to as "carbon rights"[52]), this will also depend on the domestic legal system in partner jurisdictions, but best-practice safeguards such as REDD+ SES state that where private ownership of such rights to emissions reductions and removals are allowed these rights should be based on the statutory and customary rights to lands, territories and resources that generated the reductions and removals.[53] In the context of jurisdictional REDD+ programs, because a portion of these reductions and removals are tied to policies and measures at the jurisdictional scale (e.g., a decision not to build a new road, improved enforcement, new zoning laws), the right or entitlement associated with the credits issued for some of these reductions or removals are not necessarily (and in many case are not) tied to specific lands, territories, and resources. It will be important, therefore, for jurisdictional REDD+ programs to clarify when and under what circumstances credits issued for reductions and removals will be tied to specific statutory or customary rights to the lands, territories and resources that generated the reductions and removals and when they will be tied to the policies and measures associated with the overall program. In the latter case, even if a sizeable portion of the reductions or removals are not tied to specific lands, territories, or resources, the jurisdictional REDD+

program could create specific entitlements (perhaps through legally defined allocation of credits or revenues) and benefit sharing programs for specific groups such as indigenous people, smallholders, and other forest-dependent communities. Such programs should be designed and implemented to fit within any existing legal and institutional frameworks and in accordance with best-practice safeguards provisions regarding benefit sharing.[54]

From California's perspective, irrespective of how a particular partner jurisdiction resolves these important questions of rights and benefits distribution in the design of its REDD+ program, there must be sufficient evidence of clear title to any emissions reductions or removals that are credited in the jurisdictional REDD+ program in order for them to be transferable (bought and sold) and converted into California compliance instruments as a precondition for any decision by California to link its cap-and-trade program with the jurisdictional REDD+ program. For nested REDD+ projects, project developers and/or sponsors that receive credits for emissions reductions or removals will also need to provide clear evidence of title to any such reductions or removals claimed for crediting.

In terms of the enforceability of these safeguards provisions and mechanisms to ensure accountability by partner jurisdictions regarding their adoption and implementation of robust safeguards systems, California should rely on independent third-party certification and auditing of these programs rather than attempting to perform its own regulatory oversight. As discussed in section 2.4 above on social and environmental safeguards, any decision to link with a partner jurisdiction should be accompanied by specific regulatory provisions that would suspend any such linkage in cases of serious non-compliance.

Finally, with respect to the requirement that any proposed linkage between California and a partner jurisdiction "shall not impose any significant liability on the state or any state agency for any failure associated with the linkage," which is one of the four "linkage findings" that the Governor must make before linkage may proceed,[55] it will be important for California to specify in any REDD+ regulations that it is not in any way assuming any liability for the internal operations of jurisdictional REDD+ programs in partner jurisdictions. In effect, a decision by California to link with a jurisdictional REDD+ program is a decision to allow credits issued for emissions reductions and removals under that domestic program to be eligible for use by regulated entities in California as offsets. The decision to pursue linkage will be driven by the quality and performance of the partner jurisdiction and does not involve any direct imposition of regulatory requirements or direct regulatory oversight by California. As in the case of a decision by California to link with Quebec, California can specify certain minimum conditions that a partner jurisdiction would need to meet if it is interested a pursuing a linkage with California. But the decision to develop the program and pursue such linkage is of course a decision for the partner jurisdiction. To the extent that there are particular grievances or disputes that emerge in the course of running the program (as there will inevitably be for any GHG mitigation program, including California's), those are appropriately dealt with through the domestic legal process.

Nonetheless, even though it is very difficult to imagine any viable cause of action brought by an individual from a partner jurisdiction such as Acre (or Quebec for that matter) against California on the basis of a linkage decision, an explicit statement by California up-front disclaiming any such liability will provide additional notice that any such grievances or disputes will need to be resolved under the domestic legal system of the partner jurisdictions or other appropriate forums. As discussed in various places throughout this report, California can provide very important "accountability forcing" effects by deciding to link with high-quality jurisdictional REDD+ programs that have adopted and implemented best-practice social and environmental safeguards. In doing so, however, it does not make itself a viable target for particular groups or individuals who are opposed to REDD+ under any scenario or a venue for litigants to seek recourse against their government for whatever reason. Accordingly, partner jurisdictions, in adopting and enhancing grievance processes as part of their own domestic legal frameworks and REDD+ programs, should also make clear that any such grievances or disputes are matters of domestic law (the internal workings of the REDD+ program) and thus do not in any way implicate the various market- and non-market opportunities that the REDD+ program seeks to access.

3.2 Draft Recommendations

Linkage

California and any partner jurisdiction that it decides to link with should avoid any sort of linkage arrangement that purports to operate as a "binding," treaty-like agreement as understood under public international law.

To the extent possible, California and its partner jurisdictions should pursue linkage arrangements that are consistent with the linkage arrangements being developed in the context of the Western Climate Initiative.

California and its partner jurisdictions should consider both "direct" and "indirect" linkage arrangements.

- With respect to direct linkage, California and its partner jurisdictions should consider adopting a non-binding MOU that provides for mutual recognition of the substantive elements, procedural requirements and institutional design of REDD+ offset programs in Acre, Chiapas, and/or other "supply" side jurisdictions on the one hand and the relevant California regulations regarding international sector-based REDD+ offsets on the other.
- With respect to indirect linkage, California and its partner jurisdictions should consider linking through a third-party offset provider or standards organization (e.g., CAR, VCS, ACR etc.) or through a new organization created and capitalized for the purpose of facilitating such linkage (e.g., WCI, Inc.).

Enforceability

Partner jurisdictions interested in linking with California should enact relevant laws necessary to ensure that the domestic requirements of their jurisdictional REDD+ programs are enforceable in a manner sufficient to satisfy the enforceability requirements that are included in the "linkage findings" that must be made by the Governor of California before linkage can proceed.

California should use its general buyer liability provision for offsets to further ensure enforceability of sector-based REDD+ offsets.

California should consider the use of a buffer mechanism that would provide a first tranche of replacement instruments in the case specified circumstances in which REDD+ offsets are invalidated.

Partner jurisdictions should consider innovative public/private institutions such as Acre's Company that are capable of entering into commercial relations with credit buyers and assuming relevant liabilities associated with the possibility of future invalidation of REDD+ offsets.

California and its partner jurisdictions should implement an independent third-party certification system to ensure that program requirements, including environmental and social safeguards, are being met. Any such system should include standard liability for third-party auditors to ensure proper reporting.

Rights, Tenure, & Safeguards

Partner jurisdictions should adopt and implement global best-practice safeguards with respect to rights and tenure. Any effort to clarify land tenure and resolve land ownership disputes as part of the design and implementation of jurisdictional REDD+ programs, particularly in jurisdictions with complex layers of customary land rights, will need to be undertaken with extreme care so as not to create perverse incentives that result in land grabbing or other forms of exclusion.

California has no authority to *impose* on its partner jurisdictions any particular legal requirements regarding safeguards and other protections, but California can influence the domestic processes in partner jurisdictions by choosing to link only with high-quality programs that have adopted and implemented such safeguards systems.

Partner jurisdictions should clarify in the design and implementation of their REDD+ programs (and in the associated legal frameworks) that emissions reductions and removals that result from the REDD+ program will be tied to specific statutory or customary rights to the lands, territories and resources in cases where those lands, territories and resources *generated* such reductions as provided for in global best-practice safeguards.

Partner jurisdictions should further clarify in the design and implementation of their REDD+ programs (and in the associated legal frameworks) how they will treat emissions reductions and removals that are generated by the policies and measures associated with the overall program (rather than from activities on specific lands and territories) and how specific entitlements and benefits stemming from the reductions and removals associated with these policies and measures will be allocated to specific groups such as indigenous people, smallholders, and other forest-dependent communities.

California and partner jurisdictions must ensure that there is sufficient evidence of clear title to any emissions reductions or removals that are credited in a jurisdictional REDD+ program in order for these reductions and removals to be transferable (bought and sold) and converted into California compliance instruments. For nested REDD+ projects, project developers and/or sponsors that receive credits for emissions reductions or removals will also need to provide clear evidence of title to any such reductions or removals claimed for crediting.

California should rely on independent third-party certification and auditing of jurisdictional REDD+ programs in partner jurisdictions to ensure that they have adopted and are implementing the requisite safeguards. Any decision by California to link with a partner jurisdiction should be accompanied by specific regulatory provisions that would suspend any such linkage in cases of serious non-compliance.

California and partner jurisdictions should make clear that any liability associated with the operation of jurisdictional REDD+ programs is a matter for the domestic legal system in the REDD+ partner jurisdiction and that a decision to pursue linkage does not create any new procedural or substantive rights for individuals or groups in partner jurisdictions vis a vis the State of California or an Agency of the State of California.

Section 4: Glossary and Acronyms

Definitions marked as (AB 32) are cited from the regulations for the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms, available at http://www.arb.ca.gov/cc/capandtrade/september_2012_regulation.pdf

ACR	American Carbon Registry of Winrock International
Additional	"...greenhouse gas emission reductions or removals that exceed any greenhouse gas reduction or removals otherwise required by law, regulation or legally binding mandate, and that exceed any greenhouse gas reductions or removals that would otherwise occur in a conservative business-as usual scenario." (AB 32)
Administrator	The entity(ies) responsible for implementing a cap-and-trade program, and with which a Partner Jurisdiction may develop a linking agreement.
Buffer Approaches/Pools	A holding account for forest offset credits, used to address forest carbon reversal risk. Buffers work by holding a portion of the credits issued to individual projects or jurisdictions in a pooled buffer account that are retired in the event of a reversal (or presumed reversal in the case of terminated projects/programs) no matter where it occurs in the system.
Cap-and-Trade	Application of a limit on GHG emissions, including a compliance system through the use of tradable instruments.
CAR	Climate Action Reserve
CARB	California Air Resources Board
Carbon Pool	A reservoir of carbon, such as above-ground biomass, belowground biomass, litter, dead wood and soil organic carbon, that has the ability to build or release carbon stock.
CCB	Climate Community Biodiversity Project Design standards
CCBA	Climate, Community and Biodiversity Alliance
CDM	Clean Development Mechanism
CITL	Community Independent Transaction Log
Clean Development Mechanism	A provision described in Article 12 of the Kyoto Protocol that allows tradable credits, called Certified Emissions Reductions, to be generated through emissions reduction projects in developing countries. These credits can be used by industrialized countries for compliance with their Kyoto commitments.
Crediting Baseline	"...the reduction of absolute GHG emissions below the business-as-usual scenario or reference level across a jurisdiction's entire sector in a sector-based crediting program after the imposition of greenhouse gas emission reduction requirements or incentives." (AB 32)
CRT	Climate Reserve Tonne

Double Counting	When credits (or other forms of formal recognition) are given more than once for the same reduction.
ERT	Emission Reduction Ton
ESMF	Environmental and Social Management Framework
EU ETS	European Union Emissions Trading System
FCPF	World Bank's Forest Carbon Partnership Facility
GCF	Governors' Climate and Forests Taskforce. Formed in 2008 and currently has 19 member states from the United States, Brazil, Indonesia, Mexico, Nigeria, Peru, Spain and the United States.
GHG	Greenhouse Gas. This term usually is used to refer to the collection of six types of greenhouse gases regulated by the Kyoto Protocol (CO_2, CH_4, N20, SF_6, PFCs, and HFCs).
Jurisdiction	For the purposes of this report, the term jurisdiction refers to a geopolitical unit directly below the national level, referred to in the US as a "state".
INPE	Brazil's National Institute for Space Research
IPCC	The United Nations Inter-Governmental Panel on Climate Change
ISA Carbon Program	Brazil's State Carbon Incentive Program
Leakage	Any net increase in carbon emissions (or reductions in carbon enhancement) occurring outside of the REDD+ program or nested projects as a result of REDD+ policies and measures that are implemented.
MMRV	Measurement, Monitoring, Reporting and Verification
Nested Crediting	REDD+ projects developed as part of a larger, jurisdiction-wide REDD+ program or that existed before the development of the program and are brought into alignment *ex post*.
Offset, or "Registry Offset Credit"	"…a credit issued by an Offset Project Registry for a GHG reduction or GHG removal enhancement of one metric ton of CO2e. The GHG reduction or GHG removal enhancement must be real, additional, quantifiable, permanent, verifiable, and enforceable and may only be issued for offset projects using Compliance Offset Protocols. Pursuant to section 95981.1, ARB may determine that a registry offset credit may be removed and issued as an ARB offset credit." (AB 32)
Partner Jurisdiction	A state (or other legal jurisdiction) seeking linkage with California's compliance offset program under AB 32.
Permanence/Permanent	"'Permanent' means, in the context of offset credits, either that GHG reductions and GHG removal enhancements are not reversible, or when GHG reductions and GHG removal enhancements may be reversible, that mechanisms are in place to replace any reversed GHG emission reductions and GHG removal enhancements to ensure that all credited reductions endure for at least 100 years." (AB 32)
PRODES	Forest System Mapping of Acre, Brazil
REDD	Reducing emissions from deforestation and forest degradation
REDD+	Reducing emissions from deforestation and forest degradation and increasing carbon removals from the atmosphere through forest regeneration, forest

	restoration, and tree planting.
REDD+ SES	REDD+ Social and Environmental Standards (SES) initiative, convened by CARE International and The Climate, Community and Biodiversity Alliance
Reference Level	Emissions of greenhouse gases to the atmosphere that would take place under business-as-usual circumstances (such as in the absence of a REDD+ program or other activities to reduce greenhouse gas emissions).
Registry	A database used to track information necessary to ensure that regulated entities comply with the requirements of a cap-and-trade system. The basic function of an emissions trading registry is to track the allocation and transfer of tradable compliance units (i.e. allowances, credits, or permits) among regulated entities. When offsets are part of an emissions trading system, additional information tracking functions are required.
Reversals	"…a GHG emission reduction or GHG removal enhancement for which an ARB offset credit or registry offset credit has been issued that is subsequently released or emitted back into the atmosphere due to any intentional or unintentional circumstance." (AB 32)
RL	Reference Level
ROW	REDD+ Offset Working Group
Safeguards	Mechanisms designed to ensure that environmental and social issues are evaluated in decision making, that assess and reduce the risks, and provide a mechanism for consultation and disclosure of information. (GCF)
SEPC	Social and Environmental Principles and Criteria. These are Safeguards initiatives of the UN-REDD program
SISA	The Environmental Service Incentive System of Acre, Brazil.
Third Parties	Entities outside of California or Partner Jurisdiction regulatory entities that are engaged to perform specific services in regards to the REDD+ or cap-and-trade programs. Such parties must be approved/accredited by California, and should be periodically evaluated.
UCEGO	Brazil's Central Unit of Geoprocessing
UNFCCC	United Nations Framework Convention on Climate Change, the multilateral environmental agreement to address the risk of global climate change.
VCS	Verified Carbon Standard
VCU	Verified Carbon Unit
WCI	Western Climate Initiative
Zeroing Out Approach	Adjustments to crediting baseline to account for extra-programmatic changes in GHG emissions

ENDNOTES

[1] Inter-Governmental Panel on Climate Change. 2007. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge, United Kingdom and New York, NY, USA.

[2] Inter-Governmental Panel on Climate Change. 2012. Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation. A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change. Cambridge, UK, and New York, NY, USA.

[3] REDD+ is the acronym for the mechanism within the UNFCCC called "Reducing Emissions from Deforestation and forest Degradation". The "+" refers to carbon removals from the atmosphere through

[4] Electrical Power Research Institute (EPRI). 2012. Overview of Subnational Programs to Reduce Emissions from Deforestation and Degradation (REDD) as part of the Governors' Climate and Forest Task Force Electric Power Research Institute, EPRI, Palo Alto, CA (Written by D. Nepstad, W. Boyd, J. O. Niles, A. Azevedo, T. Bezerra, C. Stickler, B. Smid, R. M. Vidal, and K. Schwalbe).

[5] Diaz, David, Katherine Hamilton, and Evan Johnson. 2011. State of the Forest Carbon Markets 2011: From Canopy to Currency. Ecosystem Marketplace. http://www.forest-trends.org/documents/files/doc_2963.pdf

[6] Forest damage through pests and disease is less common in the tropics than in the temperate or boreal zone. Forest damage through hurricanes or windstorms is important in some regions, and is described under the sections on permanence.

[7] For example, in many tropical forest regions, forest degradation through selective logging is often followed by forest conversion to crops or livestock systems. A program that addresses only deforestation could therefore overestimate emissions reductions achieved if it assumes that carbon stocks of the forests that are being converted are equivalent to those of mature forests. In a second example, some jurisdictions may have very little forest remaining, in which case the major option available is to enhance forest carbon through forest regeneration, forest restoration, or tree plantations. Alternatively, a state or province could greatly expand forest carbon enhancement through forest restoration or tree planting, but counteract this increase in carbon uptake through higher rates of forest conversion to cropland.

[8] California's cap-and-trade regulation requires that offset credits must be additional, and defines this to mean that emissions reductions "must be in addition to any greenhouse gas reduction, avoidance or sequestration otherwise required by law or regulation, or any greenhouse gas reduction, avoidance or sequestration that would otherwise occur."

[9] This date is a convenient reference point because it is just two years prior to the approval of the UN Framework Convention on Climate Change (UNFCCC).

[10] In Acre and other states of the Brazilian Amazon, a ten-year period ending in 2005 is used as the RL, since REDD arose in UNFCCC negotiations in 2005.

[11] Inter-Governmental Panel on Climate Change. 2006. Guidelines for National Greenhouse Gas Inventories, Vol. 1, General Guidance and Reporting, Section 1.4, http://www.ipcc-nggip.iges.or.jp/

Inter-Governmental Panel on Climate Chagne. 2006a. Guidelines for National Greenhouse Gas Inventories, Vol. 4, Agriculture, Forestry and Other Land Use, http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol4.html

Meridian Institute. 2011. Guidelines for REDD+ Reference Levels: Principles and Reccomendations, Prepared for the Government of Norway, by Arild Angelsen, Doug Boucher, Sandra Brown, Valérie Merckx, Charlotte Streck, and Daniel Zarin. www.REDD-OAR.org.

[12] GOFC-GOLD. 2010. A sourcebook of methods and procedures for monitoring and reporting anthropogenic greenhouse gas emissions and removals caused by deforestation, gains and losses of carbon stocks in forests remaining forests, and forestation. GOFC-GOLD Report version COP16-1, (GOFC-GOLD Project Office, Natural Resources Canada, Alberta, Canada), http://www.gofc http://www.gofc-gold.uni-jena.de/redd

[13] It may be necessary to separate reference levels for emissions and removals so that Partner Jurisdictions may introduce these activities at different times.

[14] Another option is to establish a ratio of emission reductions to offset credits issued. For example, California could issue four compliance units (offsets) for every five emission reduction credits tendered. States may also demonstrate their own, voluntary efforts by using conservative estimates of the RL, or by setting aside credits in a buffer and/or retiring credits. Under any of these options, the atmosphere benefits would be more than they would under a pure 1-to-1 offset mechanism, where every ton reduced in location A merely offsets a ton that is emitted in location B. This is true even if some part of a REDD+ Partner Jurisdiction's reductions are held as an insurance buffer or reserve against reversals, as long as less than 100% of the buffer is used.

[15] Acre recently received its first payment for historical emissions reductions, restricted to those reductions achieved in 2012. Emissions reductions began to be realized in this state in 2006.

[16] See the European Union Transaction Log, http://ec.europa.eu/environment/ets/welcome.do

[17] See http://unfccc.int/kyoto_protocol/registry_systems/items/2723.php

[18] The allowance theft that took place in the EU ETS, for example, has been attributed to lax security measures in a few of the EU member states.

[19] One of the advantages of pursuing REDD at the jurisdiction level rather than through individual projects, however, is that activity shifting on regional scales is likely to be less feasible and therefore proportionally smaller in magnitude than what may occur at the project scale.

[20] Soares-Filho, Britaldo, Paulo Moutinho, Daniel Nepstad, Anthony Anderson, Hermann Rodrigues, Ricardo Garcia, Laura Dietzsch, Frank Merry, Maria Bowman, Letícia Hissa, Rafaella Silvestrini, and Cláudio Maretti. 2010. Role of Brazilian Amazon protected areas in climate change mitigation. PNAS: http://www.pnas.org/content/early/2010/05/24/0913048107.full.pdf

[21] Phillips, O. L. et al. 2009. Drought Sensitivity of the Amazon Rainforest. Science, 323, 1344-1347.

[22] Lewis, S. L. et al. 2011. The 2010 Amazon Drought. Science, 331, 554.

[23] By adjusting the baseline, the emissions associated with the natural disturbance would in effect be "zeroed out" since they would be accounted for in both the baseline and REDD+ activity scenario (and therefore cancel each other out).

[24] Only those disturbance-related emissions that would have occurred in the baseline can be zeroed out. If a hurricane, for example, destroys forest areas that would already have been deforested in the baseline, such emissions cannot be 'zeroed out' and would have to be accounted and compensated for.

[25] To maintain solvency of the buffer (and integrity of the system), it may make sense to limit the portion of total credits in the buffer (e.g. 20%) than will be cancelled in a single year due to natural disturbances, with the remaining losses made up over subsequent years.

[26] In 2010, around one million tons CO2e were sold as offsets from forest projects that were not registered in a formal offset program (i.e., using no standard, an internally developed standard, or ISO 14064 guidelines).

[27] See, for example, The Nature Conservancy. 2010. A Nested Approach to REDD+: Structuring Effective and Transparent Incentive Mechanisms for REDD+ Implementation at Multiple Scales, available at: http://www.theredddesk.org/sites/default/files/resources/pdf/2010/TNC_june_2010_A_nested_approach_to_REDD.pdf; TerraGlobal 2010. *An Integrated REDD Offset Program (IREDD) for Nesting Projects under Jurisdictional Accounting*, available at: http://www.terraglobalcapital.com/press/Terra%20Global%20Integrated%20REDD%20Paper%20Version%202.0.pdf; and Forest Trends/Climate Focus. 2011. Nested Approaches to REDD+: An Overview of Issues and Options, available at: http://www.forest-trends.org/documents/files/doc_2762.pdf

[28] The validation criteria for measuring and reporting would be outlined in the linkage arrangement between jurisdictions.

[29] ANNEX: SOURCES FOR SAFEGUARDS

Here we briefly describe the key sources of norms and program-design ideas for the development of safeguards that operate at the jurisdictional level. The most important source of these is Annex I of the Cancun Agreement (pp. 24-25, view at http://unfccc.int/files/meetings/cop_16/application/pdf/cop16_lca.pdf). Annex I provides the text for the globally-agreed set of social and environmental safeguards that countries will use in implementing national (and subnational) REDD+ programs. The Cancun REDD+ text, at paragraph 71d, further calls on REDD+ countries to develop a "system for providing information on how the safeguards referred to in Annex I…are being addressed and respected throughout [implementation activities], while respecting sovereignty."

The safeguards in Annex I are relatively comprehensive in terms of issue coverage. The Cancun Agreement, including Annex I and the supporting language found in Paragraphs 71 and 72 of the agreement, will likely remain the essential international legal text concerning the obligation of nation-states with respect to safeguards for years to come. This is the 'floor' for adoption of standards, since the Cancun Agreement Annex I does not include an explicit call for Free, Prior and Informed Consent (FPIC)—although indigenous groups argue that the reference in the Cancun Agreement to the UN Declaration on the Rights of Indigenous Peoples, which does embrace FPIC, obligates countries to follow that standard. Moreover, it should be acknowledged that the Cancun Agreement Annex I provides little in the way of effective guidance on the actual implementation of safeguards.

A second source are the safeguards found in the World Bank Forest Carbon Partnership Facility (FCPF)'s Strategic Environmental and Social Assessment (SESA) approaches, as well as the Common Approach. For SESA, see "Forest Carbon Partnership Facility (FCPF) Readiness Fund: Incorporating Environmental and Social Considerations into the Process of Getting Ready for REDD+"; for the Common Approach, see "Forest Carbon Partnership Facility (FCPF) Readiness Fund: Common Environmental and Social Approach Among Delivery Partners." Both can be found at www.forestcarbonpartnership.org. To summarize the experience, the Bank has focused on the six most relevant Operational Policies as sources of safeguards for REDD+ programs:

Natural Habitats
Forests
Indigenous Peoples
Involuntary Resettlement

Environmental Assessment
Physical and Cultural Resources.

In addition, the Bank indicated the applicability of two other policies that do not take the form of Operational Policies: *access to information* and *accountability/grievance mechanism*. The full safeguards package, then, follows a "six plus two" formula. Countries participating in the FCPF are required to do a Strategic Environmental and Social Assessment (SESA) of proposed REDD+ policies that identifies social and environmental risks relative to the World Bank safeguards and to develop an Environmental and Social Management Framework (ESMF) which then defines mitigation actions. However, this framework does not yet provide a monitoring mechanism to demonstrate whether safeguards are being implemented effectively, and it is not clear to what extent countries will be asked to use 'readiness grants' for developing systems to monitor safeguards—or whether the flow of funding from donors will, in part, be contingent on the performance of FCPF member countries on implementation of safeguards.

The UN-REDD programme's Social and Environmental Principles and Criteria were welcomed by the UN-REDD Policy Board on March 2012 as a guiding framework for safeguards for the UN-REDD programme and can be found at http://www.un-redd.org/Multiple_Benefits_SEPC/tabid/54130/Default.aspx. One important difference between UN-REDD and the World Bank-led multilateral REDD+ efforts is that UN-REDD has explicitly embraced the concept of Free Prior and Informed Consent (FPIC) for Indigenous Peoples as guiding its implementation of REDD+ projects and programs. Another is that UN-REDD takes an explicitly rights-based approach to the development of REDD+ programs, although what this means in terms of actual implementation remains somewhat unclear.

A final, major source of global norms and a framework for implementation is provided by the REDD+ Social and Environmental Standards Initiative, known as REDD+ SES. (See www.redd-standards.org). This initiative, which is convened by the Climate, Community, and Biodiversity Alliance and CARE International, can be considered the global best practice approach to the development of national (and subnational) REDD+ safeguards. The REDD+ Social and Environmental Standards consist of *principles, criteria,* and *indicators* that define the necessary conditions for achieving high social and environmental performance in government-led REDD+ programs, and provide a performance-assessment framework that involves consultations with and input from multiple stakeholders. The REDD+ SES is the only global framework in existence for reporting on safeguards performance throughout design and implementation of a jurisdictional REDD+ program.

Acre State in Brazil is one of five jurisdictions piloting the use of REDD+ SES, and officials from Acre have provided significant input into the ROW Working Group with significant insights into the development of these standards and ideas regarding their implementation. It should be noted that Acre has made careful and continuous reference to their own state laws and administrative procedures in the development of their safeguards; and Acre made ample use of a process led by Brazilian civil society to inform this development, as well. For a useful summary of this effort, see Rubens Gomes et al., "Exploring the Bottom-Up Generation of REDD+ Policy by Forest-Dependent Peoples," **Policy Matters** 17 (2010); pp. 161-168. From the abstract: "…the Amazon Working Group, the National Council of Rubber Tappers, and the Coordination of the Indigenous Organizations of the Brazilian Amazon organized an open and public consultation process with the participation of representatives of Indigenous peoples and local communities, small land-holders, environmentalists, and researchers….[that] enabled them to express their concerns and define essential safeguards and minimum requirements that REDD+ initiatives in Brazil should comply with."

As project-level safeguards, the Climate, Community & Biodiversity (CCB) Standards are the global benchmark for how forest carbon projects should be designed and implemented not only to avoid social and environmental harm, but also to ensure that local communities and biodiversity actually benefit from such projects. These standards were developed through extensive stakeholder consultation by the Climate, Community & Biodiversity Alliance (a partnership between The Nature Conservancy, Conservation International, CARE International, Wildlife Conservation Society, and Rainforest Alliance). They were originally released in 2005. They are used by the majority of forest carbon projects around the world and are also seen as highly desirable by project investors.

[30] See for example Chhatre, Ashwini, and Arun Agrawal, 2009. "Trade-Offs and Synergies between Carbon Storage and Livelihood Benefits from Forest Commons." Proceedings of the National Academy of Sciences **107**:10821-10826.; available online at http://www.pnas.org/content/early/2009/10/05/0905308106.

[31] See http://www.ecosystemmarketplace.com/pages/dynamic/article.page.php?page_id=7887&section=home for a brief English-language overview of Bill No. 2.308 (22 October 2012), Acre's 'SISA' (Sistema de Incentivo a Serviços Ambientais) law. An unofficial translation of the Bill is found on the Governor's Climate and Forests Task Force website, at http://www.gcftaskforce.org/research.php.

[32] See http://www.redd-standards.org.

[33] There is, however, precedent for including environmental safeguards in the context of forest-based offsets. In particular, the California Climate Action Registry was effectively directed by law to require "natural forest management" as part of a forest carbon offset protocol.

[34] See California Health and Safety Code section § 38562, online at http://online.ceb.com/CalCodes/HSC/38562.html.

[35] California Environmental Quality Review Act, CAL. PUB. RES. CODE §21000 (West 2009). For an extensive discussion of CEQA's requirements for public comment and participation, see Marc B. Mihaly, "Citizen Participation in the Making of

Environmental Decisions: Evolving Obstacles and Potential Solutions Through Partnership with Experts and Agents," **Pace Environmental Law Review,** Vol 27, Special Edition 2009-2010.

[36] See Annex I, UNFCCC Conference of Parties 16 Decision ("The Cancun Agreement"), Annex I, "Guidance and safeguards for policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries." The UNFCCC guidance creates no immediate legal requirements for the states. It has not been adopted in treaty form, and even if so, states' powers to regulate as subnational jurisdictions would be limited, based on national constitutional treatment of international treaties.

[37] EcoSecurities. 2010. Forest Carbon Offsetting Report 2010 based on global survey responses from 207 organizations. At: http://www.ecosecurities.com/Standalone/Forest_carbon_offsetting_report_2010/default.aspx

[38] Governors' Climate and Forests Task Force. 2010. Task 1 Report "GCF Design Recommendations for Subnational REDD Frameworks", p 22.

[39] For example, the UN-REDD Programme currently has the following principles as a guiding framework for its safeguards system:
Principle 1: Apply norms of democratic governance, including those reflected in national commitments and Multilateral Agreements
Principle 2: Respect and protect stakeholder rights, including human rights, statutory and customary rights, and collective rights
Principle 3: Promote and enhance forests' contribution to sustainable livelihoods
Principle 4: Contribute to low-carbon, climate-resilient sustainable development policy, consistent with national development strategies, national forest programmes and commitments under international conventions and agreements
Principle 5: Protect natural forest from degradation and/or conversion to other land uses, including plantation forest
Principle 6: Maintain and enhance multiple functions of forest to deliver benefits including biodiversity conservation and ecosystem services
Principle 7: Minimise adverse impacts (direct and indirect) on non-forest ecosystem services and biodiversity.

[40] The REDD+ Social and Environmental Safeguards (SES) principles are as follows:
Principle 1: Rights to lands, territories and resources are recognized and respected by the REDD+ Program.
Principle 2: The benefits of the REDD+ program are shared equitably among all relevant rights holders and stakeholders.
Principle 3: The REDD+ program improves long-term livelihood security and well-being of Indigenous Peoples and local communities with special attention to the most vulnerable people.
Principle 4: The REDD+ program contributes to broader sustainable development, respect and protection of human rights and good governance objectives.
Principle 5: The REDD+ program maintains and enhances biodiversity and ecosystem services.
Principle 6: All relevant rights holders and stakeholders participate fully and effectively in the REDD+ program.
Principle 7: All rights holders and stakeholders have timely access to appropriate and accurate information to enable informed decision-making and good governance of the REDD+ program.

[41] See www.redd-standards.org for background information on the extensive public consultation that was used to develop the REDD+ Social and Environmental Standards.

[42] Viz., *Crosby v. National Foreign Trade Council*, also known as the 'Massachusetts-Burma Law case'. See http://www.oyez.org/cases/1990-1999/1999/1999_99_474. "The court… found that the Massachusetts Burma Law violated the Supremacy Clause because the state was acting in an area of unique federal concern, foreign policy, through a balanced, tailored approach."

[43] The REDD+ SES (Version 2, 10 September 2012) language regarding grievance mechanisms is as follows:

6.4 The REDD+ program identifies and uses processes for effective resolution of grievances and disputes relating to the design, implementation and evaluation of the REDD+ program, including disputes over rights to lands, territories and resources relating to the program.

6.4.1 Processes are identified and used to resolve grievances and disputes related to the REDD+ program.

i. Includes national, local, regional, international and customary processes.
ii. Includes grievances and disputes that arise during design, implementation and evaluation of the REDD+ program.
iii. Includes grievances and disputes over rights to lands, territories and resources and other rights relating to the REDD+ program.
iv. Includes grievances and disputes related to benefit sharing.
v. Includes grievances and disputes related to participation.
vi. The processes are transparent, impartial, safe and accessible, giving special attention to women and marginalized and/or vulnerable groups.
vii. Grievances are heard, responded to and resolved within an agreed time period, leading to adequate redress and remedy.
viii. Includes grievances related to the operational procedures of relevant international agencies and/or international treaties, conventions or other instruments.

6.4.2 No activity is undertaken by the REDD+ program that could prejudice the outcome of an unresolved dispute related to the program.

i. Includes disputes over rights to lands, territories and resources.
ii. Includes disputes related to benefit sharing.
iii. Applies to the specific area or activity affected by the dispute.

[44] See California Health & Safety Code Section §12894(f). Available at http://www.leginfo.ca.gov/cgi-bin/displaycode?section=gov&group=12001-13000&file=12894.

[45] See California Health & Safety Code Section §12894 (e). Available at http://www.leginfo.ca.gov/cgi-bin/displaycode?section=gov&group=12001-13000&file=12894.

[46] See California Health & Safety Code Section §12894 (f)(1)-(4). Available at http://www.leginfo.ca.gov/cgi-bin/displaycode?section=gov&group=12001-13000&file=12894.

[47] It is possible that an "indirect" linkage through a third-party offsets provider or standards organization could provide a path around these requirements regarding linkage. But that would frustrate the intent of the California legislature in enacting these provisions and, accordingly, should not be pursued without going through the formal "linkage findings" process that is established in the new legislation.

[48] It is also possible that the REDD+ program could simply track and verify emissions reductions that would be converted directly into the currency of the third-party offsets program.

[49] See California Health & Safety Code section §38561(d) available at http://www.leginfo.ca.gov/cgi-bin/displaycode?section=hsc&group=38001-39000&file=38560-38565 (requiring that regulations adopted by ARB regarding greenhouse gas emissions and market-based compliance mechanisms shall ensure that greenhouse gas emissions reductions achieved as, inter alia, enforceable); 17 California Code of Regulations §95802 (91) ("Enforceable" means the authority for ARB to hold a particular party liable and to take appropriate action if any of the provisions of this article are violated.").

[50] See section 17 California Code of Regulations §95985.

[51] See section 17 California Code of Regulations §95985.

[52] The term "carbon rights" can be misleading and is often used without sufficient specificity. In the context of jurisdictional REDD+ programs, one needs to distinguish between the rights or entitlement to the emissions reductions and removals associated with the program, any underlying rights to environmental services and/or forest carbon as specified in domestic legal systems, and rights to the forest itself and to the land. All of these rights can in principle be "severed" from one another, and they are recognized differently in different jurisdictions.

[53] See REDD+ Social & Environmental Standards, Version 2 (Sept. 2012) Criteria 1.4, p. 10.

[54] See, e.g., REDD+ Social and Environmental Standards (Sept. 2012) Principle 2, p. 11.

[55] California Health & Safety Code §12894(f)(4), available at http://www.leginfo.ca.gov/cgi-bin/displaycode?section=gov&group=12001-13000&file=12894