CLIMATEFOCUS

Climate Advisers

Should REDD+ be Included in the CDM?

Analysis of issues and options

Prepared for the CDM Policy Dialogue

Authors:

Climate Focus
Robert O'Sullivan
Campbell Moore

Climate Advisers
Michael Wolosin

Independent Consultant
Donna Lee

June 2012

Content

Summary for Policymakers

In short: We recommend the Panel give close consideration to expanding CDM to include additional REDD+ activities, and/or piloting sectoral "RED" at national or subnational scale.

What is the current status of REDD+?

The treatment of forests continues to evolve under the UNFCCC and Kyoto Protocol, with the most recent developments under the Convention advancing REDD+ considerably. The origin of REDD+ on the international agenda dates to the submission by Papua New Guinea and Costa Rica at COP-11 in 2005 that deforestation be added to the annual meeting's agenda. Since that time the scope has expanded from reducing emissions from deforestation (RED) to include also forest degradation, conservation and enhancement of forest carbon stocks, and sustainable management of forests, known as REDD+. Further UNFCCC decisions have reaffirmed the "crucial role" of REDD+ and provided guidance and frameworks to further develop REDD+, recognizing the use of market-based finance.

This evolution suggests a need to revisit early decisions to exclude some REDD+ activities from the CDM. Currently under the Kyoto Protocol's CDM, only the afforestation and reforestation activities of REDD+ are included due to initial environmental and market concerns with other activities in the full scope of REDD+. However, Parties to the Kyoto Protocol are currently considering expanding the scope of eligible land use activities beyond afforestation/reforestation. A broader reform of the CDM beyond a project based approach to possibly include sectoral approaches is also being contemplated, which, while distinct from forest sector scope considerations, could align well with REDD+.

Technological and methodological advances have alleviated many of the initial concerns with REDD+. Key issues to be addressed to ensure the integrity of REDD+ emission reductions and removals include additionality, baselines, leakage, non-permanence, and monitoring. Over the past several years, tools have been developed within CDM, as well as in voluntary markets that address such issues—including the use of buffers, insurance mechanisms, and temporary crediting. Monitoring technology has also improved rapidly in recent years.

What is the current market status of REDD+, and how could REDD+ impact CDM markets?

Some studies indicate a potentially large supply of REDD+ credits, yet the true feasible supply is likely only a fraction of such estimates. Some estimates of REDD+ supply potential cite up to 7.8 billion tonnes of reductions per year (for comparison, the maximum annual volume of CERs transacted was about 550 $MtCO_2$ in 2007). These estimates are, however, the theoretical biophysical potential and comparable to similar estimates for afforestation and reforestation, which has not materialized. Studies of more realistic potential supply take into account technical and political constraints and yield supply estimates as low as 54 million tonnes per year at a price of $5-$10/tonne ranging up to 2.4 billion per year at a price of $10-$20 per tonne.

Existing supply and demand for forestry credits remain low; lack of demand may be the major constraint to increased REDD+ supply. Current supply and demand of forestry credits is less than 0.1% of the volume of global carbon markets, due largely to the lack compliance market demand for carbon credits generally, and specific prohibition of forestry credits from the largest markets. Despite minimal compliance demand, voluntary market demand is growing and made REDD+ one of

the highest priced voluntary offset types in 2011. Multilateral and bilateral programs will also bolster the demand for REDD+ emission reductions in coming years.

The market effects of including REDD+ in the CDM are difficult to quantify and will depend on design. The effect of including REDD+ in the CDM will be influenced by a number of factors, including (i) how REDD+ is included in the CDM and whether the rules will actually lead to the generation of credits; (ii) whether there will be any demand or market for the credits in complementary domestic systems (such as the EU ETS); and (iii) if CDM decides to put limitations on the volume of REDD+ credits. Currently, forestry projects are nearly insignificant under CDM (0.9%) and JI (0.3%) due to low demand for temporary credits and technical challenges. In contrast, forestry projects have high penetration in voluntary markets which create fungible credits and deal with non-permanence through buffers. Depending on how REDD+ is designed, actual supply or REDD+ credits may be minimal with minimal market effects.

Overall, the risk of oversupply and market flooding from REDD+ appears low in the near- to mid-term. Irrespective of potential supply, the amount of REDD+ actually credited through CDM could be controlled via quantitative caps or other mechanisms.

What are the potential benefits and risks of including REDD+ in CDM?

Including REDD+ in the CDM can promote sustainable development and cost effective emissions reductions – core objectives of the CDM. Particularly if implemented with robust social and environmental safeguards, REDD+ activities can increase investment in developing countries, improve land management and forest governance, and help to protect important ecosystems which are critical to the livelihoods of many of the world's poorest communities. REDD+ could also help shift the distribution of CERs towards a more equitable balance amongst countries (i.e. many forested developing countries do not have many opportunities in other sectors, and many are LDCs), which has been identified as a weakness of CDM to date. In addition, REDD+ is seen as a means to cost-effective emission reductions, offering the potential for raising overall levels of ambition. Further benefits could come from learning-by-doing under the CDM. REDD+ is likely to be integral to a future climate agreement and the inclusion into the CDM would provide lessons and experience under an international compliance market.

Including REDD+ in CDM also presents price and supply, environmental, institutional, and reputational risks. Without careful design and implementation REDD+ could place substantial new demands on the CDM, particularly if it involved testing a new sectoral instrument, posing institutional risks that could destabilize well-established processes. Risks to local communities and indigenous peoples must also be addressed though strong safeguards and safeguard procedures, which would pose challenges to the CDM. Finally, risks to pre-judging the negotiations exist but can be reduced – but probably not eliminated fully – by providing flexibility for how countries might pursue REDD+ through the CDM, by considering this a pilot/testing phase, and by limiting the quantity of allowable credits.

What are the options of incorporating REDD+ in CDM so as to build learning-by-doing?

We have identified and analyzed four primary options: Each of these "REDD+ in CDM" options brings a slightly different mix of advantages and disadvantages as follows (and summarized in the table below).

Option 1: Maintain the status quo, excluding REDD+ activities from CDM.

This path of least resistance would avoid risks to the CDM, but also forego important potential benefits. This option would convey a lack of confidence in the long-term potential scope and impact of CDM, a lack of vision for CDM as providing an innovative laboratory for market-based

climate mitigation, and most important would forego important opportunities for CDM to meet its core objectives of sustainable development and (cost effective) mitigation.

Option 2: Expand project-based CDM to include additional REDD+ activities.

The Panel could recommend that CDM expand eligibility for new types of forest-sector projects beyond the currently allowed afforestation and reforestation. This option creates the potential to generate some benefits of project-based REDD+ but will also create a number of risks and generate criticism, as there is little political support for REDD+ projects.

Option 3: Expand CDM to pilot sectoral "RED" at national or subnational scale.

There are technical, data, and capacity challenges for most countries to participate in a full sectoral crediting mechanism that requires baselines and MRV of all forest-related activities. However, many countries are building monitoring systems that, as a first step, will enable them to measure national and/or subnational deforestation. In this regard, many countries are interested in incentives for simply reducing emissions from deforestation, or participating in an early "RED" mechanism—with options to expand to other forest-related activities later as their ability to measure degradation and regrowth improve. There are benefits of sectoral-based "RED" in the CDM that avoid some of the project risks, but additional risks are created.

Option 4: Pilot sectoral RED, and allow new project types in the context of a national or interim subnational REDD+ framework.

A fourth option is to combine Options 2 and 3 with some modifications to allow piloting of national or interim subnational sectoral RED, while also allowing new REDD+ project types, but only in the context of a national REDD+ framework. Projects would be allowed only if a national monitoring system and appropriate institutional frameworks that avoid double-counting were in place, and the projects were "nested" within national or interim subnational accounting and reporting systems. This option captures most potential benefits but still contains risks.

For any of the options that expand CDM to include REDD+, we strongly recommend the following design elements be included to manage and mitigate risks and maximize benefits:

- **Limit demand** for such new activities to manage potential market-flooding, using a quantitative limit or other mechanisms.
- **Limit the initial scope**, with options to phase in other activities—such as reduced emissions from forest degradation or conservation of forest carbon stocks—that involve more complex technical requirements, at a later stage.
- **Require strong social and environmental safeguards**, guided by agreements under the UNFCCC and the high-quality safeguards approaches developing under some voluntary standards.
- **Protect against reversals** by requiring a buffer reserve, insurance, or other mechanism.
- **Ensure sustainable development benefits** by supplementing the current DNA approval procedures with additional criteria ensure that projects generate sustainable development benefits along with options for third party review and verification.
- **Ensure credible and conservative crediting baselines** to reduce any non-additional tons.
- **Limit projects to large-scale only**, based on a minimum areal extent.

Summary for policy makers table 1: Summary of Benefits, Challenges, and Risks of Key Design Options

(🟢 = low risk and/or high benefit 🟡 = medium risk and/or benefit 🔴 = high risk and/or low benefit)

Option:	Status Quo: exclude REDD+ from CDM	Expand project-based CDM to include additional REDD+ activities	Pilot sectoral "RED" at national or subnational scale	Pilot sectoral RED and allow projects in the context of national or subnational systems	Brief explanation
Meets objectives of CDM					
Promotes sustainable development	🔴	🟡	🟢	🟢	Projects promote sustainable development in limited geographic areas, while sectoral crediting at larger scales promotes improved governance, policies, and practices in the forest sector more broadly. The combination can achieve both according to host-country capacity.
Delivers additional mitigation	🔴	🟡	🟢	🟢	Additional mitigation potential is possible with REDD+, but sectoral crediting is expected to generate larger volumes if implemented successfully.
Harnesses cost-effective reductions	🟡	🟢	🟢	🟢	Both sectoral- and project-based REDD+ would be expected to generate low-cost emissions reductions.
Maximizes participation by developing countries	🟡	🟡	🟡	🟢	Project-based REDD+ would maximize participation by LDCs; sectoral crediting would maximize participation by wealthier developing countries; the combination could achieve both.
Creates risk of disenfranchising indigenous peoples or local communities	🟢	🟡	🟡	🟡	Existing COP decisions reduce risk, which can be further reduced by appropriate guidance on safeguards including implementation, reporting and verification.
Creates risk of negatively impacting biodiversity	🟢	🟡	🟡	🟡	Existing COP decisions reduce risk, which can be further reduced by appropriate guidance on safeguards including implementation, reporting and verification.
Learning-by-doing for CDM					
Builds knowledge and capacity for REDD+ in UNFCCC context	🔴	🟢	🟢	🟢	Both project and sectoral REDD+ would provide new learning-by-doing for CDM on forest sector MRV, safeguards, reference levels, and addressing reversal risk.
Prepares CDM for a role in UNFCCC new market mechanisms	🟡	🔴	🟢	🟢	REDD+ may be the best option for a new sectoral CDM mechanism. Sectoral crediting would require new approaches to setting reference (emission) levels that would involve host-country governments. The combination could provide this benefit with less risk than pursuing sectoral alone.

Avoids risks to CDM					
Limits CER supply increase	🟢	🟡	🟡	🟡	Including any REDD+ in CDM could exacerbate oversupply problem. Mechanisms to limit demand can apply to project or sectoral REDD+ or the combination.
Minimizes institutional demands on CDM	🟢	🟡	🔴	🔴	Moving from temporary crediting to another approach would create additional institutional demand. CDM could begin allowing REDD+ projects using existing project cycle and institutions, *mutatis mutandis*. Sectoral crediting for REDD+ may require substantial change to basic institutions and processes. Pursuing both increases institutional demands beyond either option alone.
Limits risk of environmentally questionable or "non-additional" CERs entering the market	🟢	🔴	🟡	🟡	Environmental integrity risks are generally considered higher for leakage at the project scale, but baseline setting at larger scales can also contain risks.
Learning-by-doing and other benefits for REDD+					
Increases demand for REDD+	🔴	🟡	🟢	🟢	Allowing REDD+ into the CDM may create new demand for REDD+; in general sectoral REDD+ may see broader acceptance.
Consolidates fractured REDD+ market	🔴	🟢	🟢	🟢	Any expansion option could allow CDM REDD+ methodologies to become a benchmark for REDD+.
Doesn't prejudge negotiations	🟢	🟡	🟡	🟢	Pursuing only project-based or only sectoral-based REDD+ in CDM would likely be seen as prejudging the negotiations; allowing both could minimize impact. Some decisions on critical open issues might need to be taken regardless.
Extends REDD+ experience beyond existing mechanisms	🔴	🟡	🟢	🟢	Project-based REDD+ in CDM would provide a new interface for market-based REDD+ to the UNFCCC context. Sectoral REDD+ in CDM achieves this and more, including negotiation RELs/RLs with governments in multilateral context.
Speeds developing-country capacity building	🔴	🟡	🟢	🟡	Governments would see more incentive to pursue REDD+ capacity building and forest sector governance efforts under a sectoral approach. Allowing countries to choose project-based REDD+ instead could reduce this benefit.

1 Background on REDD+ negotiations

Key Message
REDD+ negotiations under the UNFCCC started with a submission by Papua New Guinea and Costa Rica at COP-11 in 2005. The scope has since expanded from reducing emissions from deforestation (RED) to include forest degradation, conservation and enhancement of forest carbon stocks, and sustainable management of forests, known as REDD+. UNFCCC decisions have reaffirmed the "crucial role" of REDD+ and provided guidance and a framework to further develop REDD+, recognizing the use of market-based finance. A number of issues still remain unresolved, including the scale(s) at which results-based finance should be eligible, the relationship of reference levels to financing, environmental and social safeguard requirements, and the role of REDD+ as offsets.

1.1 The Evolution of REDD+

The UNFCCC: REDD+ from COP-11 (Montreal) to COP-17 (Durban)

The explicit inclusion of forest-related activities, in particular deforestation, within the UN Framework Convention on Climate Change (UNFCCC) has been continuously evolving. In 2005 at COP-11 in Montreal, Papua New Guinea and Costa Rica requested that a new, separate agenda item on deforestation be added to the Conference of the Parties annual meeting. The scope was, at that time, limited to 'reducing emissions from deforestation in developing countries' (RED).[1] Over the years, the concept has expanded to include not only deforestation, but also forest degradation, and the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks—altogether now known as "REDD+".

At COP-13 in 2007, REDD+ was included in the Bali Action Plan, further solidifying its place in a future international climate agreement. REDD+ was again recognized in the Copenhagen Accord in 2009, as having a "crucial role" in global mitigation efforts.[2] The following year in Cancun, a more detailed REDD+ decision[3] was agreed that included the following:

- Encouraged developing countries to contribute to mitigation by undertaking five activities: (1) Reducing emissions from deforestation; (2) Reducing emissions from forest degradation; (3) Conservation of forest carbon stocks; (4) Sustainable management of forests; (5) Enhancement of forest carbon stocks.

- Provided guidance and a framework for undertaking such actions that includes developing:
  - National strategies or action plans;
  - Reference (emission) levels;
  - Robust and transparent national forest monitoring systems;
  - Systems for providing information on safeguards.

---

[1] Item 6/CP.11. *Reducing emissions from deforestation in developing countries: approaches to stimulate action*.
[2] Decision 2/CP.15. *Copenhagen Accord.* Paragraph 6
[3] Decision 1/CP.16. *Policy approaches and positive incentives on issues relating to reduction emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest crbon stocks in developing countries.* Section 6.

- Decided countries should take a "phased" approach that begins with strategy planning, moves to implementation, and evolves into "results-based actions that should be fully measured, reported and verified";

- Set up a process to negotiate other elements that would be necessary to operationalize "results-based incentives" for REDD+ actions in a future regime.

In Durban (Dec 2011), Parties recognized the use of market-based finance for REDD+. At COP-17, countries adopted a decision on REDD+ that suggests "appropriate market-based approaches could be developed by the COP to support results-based actions".[4] It left unresolved, however, what is meant by market-based approaches, and also skirted the issue of whether or not bilateral, or non-COP developed mechanisms, would be recognized under the UNFCCC.

Many countries expect discussion under the UNFCCC to result in a mechanism that will help to finance the collective and agreed goal of "slowing, halting, and reversing forest cover and carbon loss". In particular, most countries want to see a pay-for-performance system for REDD+ actions that lead to measured, reported and verified emission reductions. Countries are currently engaging in discussions over how to set "forest reference emission levels and forest reference levels", and the requirements for measuring, reporting and verifying (MRV) emission reductions.

The Kyoto Protocol: From Marrakesh to the Present

Currently only a portion of REDD+ activities are included in the CDM, namely afforestation and reforestation (A/R). Reducing deforestation and forest degradation, forest management, and conservation of forest carbon stocks which represent the majority of mitigation potential for developing countries in the land use sector, was excluded. Negotiations over the integration of land use, land-use change and forestry (LULUCF) activities in the CDM ended two years after the conclusion of the Marrakesh Accords—in particular, after LULUCF's two main supporters (the US and Australia) announced in 2001 that they would not ratify the Kyoto Protocol.

Opponents to including deforestation in the CDM cited concerns regarding environmental and market risks associated with such credits.[5] In particular, there was scepticism over the ability of countries to measure with accuracy emission reductions from deforestation, and that the amount of potential credits might "flood" the market and prevent real reductions from occurring in Annex I countries.

Since then, the technical challenges to measuring deforestation are increasingly being addressed through rapidly advancing satellite and aerial remote sensing techniques and improvements in ground-truthing through field measurements. Such improvements are decreasing the uncertainties associated with estimates of forest-related emissions and removals and building confidence among countries in the ability to measure them more accurately. Forest degradation, however, remains more problematic, although technologies and methods are being developed to improve estimations for this activity as well.

Meanwhile, market flooding can be managed through quantitative limitations, and is discussed in more detail in Section 5.4.

---

[4] AHWG-LCA Decision/CP.17. Section II., Section C. Paragraph 66.
[5] Fearnside, Philip M. (2001). Environmentalists split over Kyoto and Amazonian Deforestation. Environmental Conservation (28)

The Durban Platform: Perspectives on REDD+ in the Future

A future agreement under the Durban Platform will likely include REDD+, although what form it takes remains to be seen. There are a number of issues that integration of REDD+ into a broader framework would need to consider, including:

- How REDD+ might fit into "new mechanisms" which could include both sectoral crediting and/or project offsets.
- How any developing countries that take on commitments, but who also want to participate in a REDD+ mechanism, might do so.
- How REDD+ might be considered in broader agreements on how to account for LULUCF emissions and removals.

1.2 Concerns that would affect the inclusion of REDD+ in the CDM

A number of outstanding issues remain unresolved in the REDD+ negotiations, largely due to a lack of convergence or agreement on such topics. How these issues are resolved under the UNFCCC can impact whether and how REDD+ could be included in the CDM. These issues include:

Scale: National, Subnational or Project?

One of the most contentious issues in past years in the REDD+ negotiations has been over the issue of at what scale—national, subnational, or project—should REDD+ "results-based" actions be eligible for results-based financing. Many countries argue that REDD+ should only be a national-level mechanism, with performance measured against a national baseline (similar to a sectoral mechanism), while others adamantly insist on eligibility for subnational REDD+ actions (largely considered to be at an administrative or large landscape level). Very few currently support smaller, stand-alone project-level activities—although this is a preferred option for the private sector.

Current agreements under the UNFCCC suggest that subnational REDD+ actions can be considered as an "interim" measure; but does not offer clarity on the implications for financing, nor does it define what "subnational" means.[6] In addition, more recently countries are experimenting with how to "nest" project-based activities into broader subnational and/or national frameworks and reference levels.

Scope: REDD+ vs. LULUCF, Gross vs. Net, or Activity-based vs. Land-based?

In current UNFCCC agreements, REDD+ is defined as the five activities described in Section 1.1. However, under the current SBSTA work program, the potential contribution of other LULUCF activities in developing countries are to be considered, including their potential to contribute to mitigation. Some countries would like to add additional activities to the five currently agreed REDD+ activities. For example, non-forested peatlands, coastal and marine ecosystems, and agriculture have been discussed informally among some Parties.

Another area that lacks clarity is whether a country could account for only a single activity (such as deforestation or reforestation), but not others. It is not clear whether a country could carry out gross

[6] Decision 12/CP.17 *Modalities for forest reference emission levels and forest reference levels*. Paragraph 11.

accounting of deforestation, for example, or if it must take into account regrowth. This is particularly considered problematic if a country wants to only account for reforestation, but has significant deforestation occurring at the same time. Finally, there has been no clarity on if a country could consider a land-based accounting approach (as is done for GHG inventories under the UNFCCC), or must use an activity-based approach (as is used for LULUCF activities in Kyoto Protocol accounting).[7]

Reference Levels: Relationship to Financing Undefined

The creation of a baseline from which to provide financial incentives for REDD+ actions has been one of the most difficult issues within the REDD+ negotiations. With exception to a recent decision by Kyoto Parties on forest management reference levels, the use of historic data (e.g. 1990 levels of emissions) has been used to measure performance. However, historic baseline methods have been seen as problematic, particularly by "high forest cover, low deforestation" countries that are under increasing pressure from economic growth or agricultural expansion—and absent additional policies or measures expect deforestation to increase.

Currently, countries have agreed that developing countries should set "forest reference emission levels and/or forest reference levels expressed in tons of CO_2eq/year as benchmarks for assessing each country's performance".[8] Importantly, crediting baselines and reference levels are not always the same thing. Reference levels, as defined by the UNFCCC, are "benchmarks for assessing each country's performance" and, as such should represent business as usual (BAU) projections of forest emissions and removals in the absence of additional activities, policies, or measures. A crediting baseline, however, would be what is used to provide pay-for-performance finance.[9] It was agreed that such reference levels should take into account historic data, but could also "adjust for national circumstances"—although it is not yet clear what this means. What little guidance has been given, suggests an approach that is flexible (allowing for some choice in pools, gases and activities), step-wise (allowing for improvements over time in data and methodologies), and transparent (countries submit information and a rationale). Countries have been invited to submit information—including data, methodologies, approaches, policies, and a rationale on the development of their forest reference levels.

Finally, there is no agreement yet on how such reference levels would relate to future financing and/or baselines for an offset-like mechanism. Some parties want to include a "development adjustment factor"; others want emerging economies to include some accounting for their own efforts to mitigate GHG emissions under a new agreement that includes responsibilities for more developed Annex II countries.

---

[7] Activity-based accounting is the traditional approach in mitigation projects. Activity accounting focuses on the activity being implemented and determines the baseline and monitors emissions and sequestration directly associated with the activity. An example is forest management where the activity might be reduced impact logging. In this case an activity-based accounting approach would look directly at direct and incidental emissions and sequestration associated with the felling and extraction of timber trees. Land-based accounting takes a broader perspective. Inventory plots are established across a country and regularly monitored. Plots are established systematically and at sufficient density to capture stocks and changes in stocks across the country's forests. A land-based approach captures changes that occur in the specific plots and multiply this sample up to the entire forest. In this case emission reductions associated with reduced impact logging would, in theory, be captured alongside all other changes in stocks in the forests. Land-based accounting can be very expensive. (Adapted from Verified Carbon Standard Association, *Jurisdictional and Nested REDD Initiative: Summary of Technical Recommendations – Version 2.0*, February 2012, Annex, available at http://v-c-s.org/JNRI)

[8] Decision 12/CP.17 *Modalities for forest reference emission levels and forest reference levels.* Paragraph 7.

[9] Angelsen, A., D. Boucher, S. Brown, V. Merkx, C. Streck, D. Zarin. (2011) *Guidelines for REDD+ Reference Levels: Principles and Recommendations.* Meridian institute.

Safeguards: Reporting requirements; reputational risks; etc.

The UNFCCC has adopted a set of decisions[10] pertaining to the need for safeguards when planning, implementing, or providing support for REDD+. These safeguards include transparent and effective national forest governance structures, respect for the knowledge and rights of indigenous peoples and local communities, the full and effective participation of relevant stakeholders, and ensuring that actions are not used for the conversion of natural forests.

Parties have agreed that developing countries taking part in REDD+ activities should provide information periodically in their National Communications on how social and environmental safeguards are being addressed and respected. It does not suggest how often, the level of detail, nor provide any additional guidance for reporting. However, SBSTA is to report further on safeguards in December 2012 at C0P-18. Many developed countries support such safeguards measures out of concern for reputational risks associated with financing forest-related activities. However, developing countries are concerned about how such requirements affect sovereignty issues, as well as the precedent and fairness of such requirements—which are not included in reporting obligations of Annex I Parties.

REDD+ as Offsets

The vast majority of forested developing countries support the use of markets for REDD+ financing. A few Annex II countries, however, have fought to block markets either due to concerns that forests will be "reduced to carbon" (and not valued for their full suite of benefits, including ecosystems and other values), or concerns that inexpensive REDD+ credits will allow developed countries to avoid responsibility of managing domestic GHG emissions. Some suggest allowing REDD+ credits to be matched with a higher level of ambition from Annex I countries regarding quantified emission reduction limitations. Several developed countries—notably the European Union—have also noted some scepticism over the use of market approaches for REDD+ in the near-term.

Countries who support the use of markets, however, feel strongly that REDD+ credits should be created to be fungible with other types of credits. There is little appetite for creating temporary REDD+ credits mimicking the credits generated for CDM forestry projects, as many have seen how such credits have affected the attractiveness of afforestation and reforestation in the CDM.

1.3 The future of REDD+ in the context of a new climate agreement

Since COP-13 in Bali, forests have held a unique place in the UNFCCC negotiations. No other sector has been as prominent in the negotiations, or been provided its own work stream (although agriculture was recently, in Durban, given its own SBSTA agenda item). In this regard, it has progressed both in parallel with, as well as somewhat separately, from the larger mitigation discussions. This is despite it being, in fact, a subset of non-Annex I mitigation. There are, however, important distinctions that are likely to be considered as discussions over a new climate agreement under the Durban Platform for Enhanced Action move forward.

Firstly, for all developed countries with the exception of New Zealand, no subset of the land use, land-use change and forestry (LULUCF) sector is capped. Instead, if land use enters at all into national GHG

[10] Decision 12/CP.17. Guidance on systems for providing information on how safeguards are addressed and respected and modalities relating to forest reference emission levels and forest reference levels as referred to in decision 1/CP.16

frameworks, it has been only as an offset mechanism. This is partly because emissions and removals from land use are diffuse versus point-source (such as in the energy sector) and therefore more difficult to regulate (particularly if land is privately owned), but also due to technical concerns over measurement. In addition, for most Annex I countries, the forest sector is a net sink, which has caused some politicians to have difficulties with understanding why they should take on liabilities for a declining sink, if overall the sector on a yearly basis is sequestering carbon. The result is that, unlike other sectors where increasingly emerging developing economies are creating policies with targets or creating domestic cap-and-trade systems, it is very unlikely that developing countries would move towards capping their forest sector. REDD+ is therefore much more likely to move in the direction of a sectoral crediting versus capped sector.

The other major difference for REDD+ in a future agreement is that the majority of forested developing countries are least developing countries (LDCs). Particularly if the direction of a new agreement begins to treat "common but differentiated responsibilities" in a more nuanced way from the bifurcated Kyoto Protocol, most forested LDCs are unlikely to be willing to take on liabilities for their forests and only agree to mechanisms that provide "positive incentives" for forest protection. There is increasing support for what has been called a "development adjustment factor" for a REDD+ mechanism, which would integrate countries' own actions (expected of higher-level economies such as Mexico and Brazil) into any baseline used for financial crediting or incentives. Most forested LDCs see REDD+ as a sustainable development opportunity, and so its acceptance into a future mechanism will have a different political lens than many activities in other sectors.

Because of these differences, REDD+ may not fit neatly into broader analyses of how a variety of mitigation opportunities might be treated in a future agreement. To date, REDD+ has continued to both keep its separate nature, while struggling to also fit within a broader international agreement on climate change, and there remain a range of opinions amongst parties to the UNFCCC on how to best reconcile its “separate but equal” nature.

2 Integrity of REDD+ emission reductions or removals

Key Message

Issues to be addressed to ensure the environmental integrity of REDD+ emission reductions and removals include additionality, baselines, leakage, non-permanence, and monitoring. Options exist to demonstrate additionality at the project and larger scales. Leakage can be reduced through implementing REDD+ at large scales and leakage mitigation activities, with any remaining leakage accounted for and deducted. A challenge of monitoring and accounting for some types of leakage remains. Options exist for addressing non-permanence risk, such as buffers, insurance mechanisms, and potentially temporary crediting. Finally, monitoring technology has improved rapidly in recent years and is effective at large scales.

2.1 Baselines and additionality

Additionality: Key Issues

REDD+ at Project Scale: According to Article 12.5(c) of the Kyoto Protocol, the achievement of additionality is required for all CDM projects. Most assume that if REDD+ were to be eligible at a project level, such a requirement would apply and should be no different than the requirement for other sectors, i.e. REDD+ projects should generate emission reductions that are additional to what would have happened in the absence of an intervention and the carbon revenues attributed to it.

Tools for assessing additionality for forest projects have been developed—both under the CDM[11] (for A/R) as well as within voluntary market standards[12] (for REDD+, and A/R). There are, however, challenges related to assessing additionality in the land use sector, for example, understanding the role of legislation, level of enforcement, statutes of protected areas, or the implementation of mining and logging concessions. Clarity of land tenure and its effect on deforestation can also be difficult to determine.[13]

[11] For examples, see *Tool for the Demonstration and Assessment of Additionality in A/R CDM Project Activities.*

[12] For examples, see VCS VT0001 *Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities, v3.0.*

[13] Robinson, B., M. Hollan, L. Naughton-Treves (2010) *Does secure land tenure save forests? A review of the relationship between land tenure and tropical deforestation.* CGIAR Research Program on Climate change, Agriculture and Food Security. Working Paper No. 7.

Does the project generate "additional" emissions reductions?

A significant hurdle lies in the assessment of government legislation concerning protected areas and deciphering whether a forest was or is actually destined for deforestation. This requires an assessment of each project in detail, in particular its former land uses, its present land use, national or regional legislation governing the uses allowed thereon, existing concessions, and relevant title to the land. However, such considerations beg the questions of what stage of development a logging concession must be in order to be characterized as additional, and conversely, what threshold for domestic sustainable forest legislation precludes the need for REDD payment assistance? For example, Guyana has recently prepared draft legislation to create a national Protected Areas system, which is expected to encompass payments for ecosystem services such as carbon (although this is currently delayed pending the outcome of an international REDD mechanism). In Cameroon, the procedure for acquiring a forest concession involves several stages of application including a public call for tender and a resulting inter-ministerial grant to the successful bidder. A provisional three-year forestry concession is then granted, and upon its expiry, the same party can apply for a permanent exploitation contract. At what stage then should lawyers decide that a forestry concession applies to a given acreage for additionality purposes, and should the tendering stage be considered?

Source: *Doyle, Gavin, IUCN ELC 2009 REDD Legal Frameworks, Chapter 4 "Additionality and Permanence"*.

REDD+ at large jurisdiction/national scale: Some take the position that if REDD is a national or sectoral-level mechanism, overall emission reductions against a reference (emission) level should automatically be considered additional – assuming the reference (emission) level is an accurate prediction of the future business as usual scenario.[14] As noted above, a crediting baseline can be differentiated from this, with the difference representing non-credited "own efforts" or other reductions not supported by an offset market. The key to ensuring additionality in this approach is ensuring an accurate and appropriately conservative reference (emission) level or baseline. If this does not happen, it opens up the risk of recording false emission reductions or "hot air".

Baselines: Key Issues

Creating baselines against which to measure performance is also key to achieving environmental integrity. Setting baselines in the land use sector, however, is seen as more complex than for other sectors. This is, in part, due to the fact that land use both sequesters and emits greenhouse gases, but also due to non-anthropogenic, or natural effects – such as somewhat unpredictable impacts of fire, pest outbreaks, and hurricanes on forest carbon stock and the "age-class" structure of trees, which naturally grow and then die off over time. Because of these effects, using a pure historic baseline—which is the norm for other sectors—when measuring performance related to reducing emissions or increasing removals for forest categories in GHG inventories (deforestation, forest management, afforestation/reforestation) has not been seen as a sufficient means to measure the effects of actions taken by countries.

Projected baselines: Parties to the Kyoto Protocol have recognized this problem—particularly for the category of forest management—and have negotiated a new type of baseline that Kyoto Parties will now use to measure performance. Countries now have the option to put forward a "projected" baseline that should reflect the level of emissions that would occur in a business as usual scenario. It could, for example, take into account information about the age-class structure of a country's forests. It could also include a country's harvesting cycle or biofuels policy in place prior to a certain date. Ostensibly, such projected baselines offer the highest level of incentives and additionality.

[14] VCS Jurisdictional and Nested REDD+ Technical Recommendations (2012).

Many developing countries with currently low deforestation rates, but increasing pressure on their forests—from agriculture, mining, rising energy needs, or infrastructure development—want to factor in new pressures into a "business as usual" scenario that takes into account expected increases in economic activity. Just as in other sectors, however, future emission rates are influenced by many factors that are difficult, if not impossible, to predict including some—such as future global agricultural commodity prices—that are unknown and beyond the REDD+ country's control.[15]

However, the alternative of using purely historic baselines—particularly for "avoided deforestation"—could lead to benefitting those countries with historically "bad" behavior, i.e. high deforestation rates, even if the high rates are not expected to continue into the future.[16] Or worse yet a purely historic approach may encourage countries to raise their deforestation rates in anticipation of a future REDD+ financing mechanism.

Data challenges: The creation of baselines requires sufficient data—which, for many developing countries is a challenge for the land use sector. Even the data required to develop a historic emissions/removals baseline from forest-related categories—the simplest form of a REDD+ baseline—will require, for most developing countries, improvements in their current monitoring systems. Creating projected, or business-as-usual baselines will require even higher levels of information and, in many cases, modelling capacities. Even if these modelling capacities can be developed and information is available, some recent efforts by academics have indicated that simpler historical approaches can produce more credible and accurate baselines.[17]

National versus project scale: Setting baselines at different scales have different challenges. At the project scale, one can use comparable reference areas to measure performance including additionality. At the national scale, these references no longer exist—and a causal pathway may be more difficult to create. External effects, such as how global commodity prices can affect performance against an ex-ante baseline, become a greater challenge to ensuring environmental integrity.

Possible solutions

Both additionality and reference level setting pose challenges for REDD+. However, there are options available that can mitigate such risks.

Possible solutions to manage…

- ***…ensuring additionality at project scale***: the CDM has created a tool[18] for assessing additionality in afforestation/reforestation projects that has been adapted by a number of voluntary market standards for use in deforestation projects (e.g. American Carbon Registry, Verified Carbon Standard, Plan Vivo). As there are few validated "avoided deforestation" projects to date, it is too early to assess the effectiveness of these new tools and processes.

---

[15] Angelsen, A., D. Boucher, S. Brown, V. Merkx, C. Streck, D. Zarin. (2011) *Guidelines for REDD+ Reference Levels: Principles and Recommendations.* Meridian institute.

[16] Parker, C., Mitchell, A., Trivendi, M. and Madras, N. (2009). *The Little REDD+ Book.* The Global Canopy Foundation, Oxford, UK>

[17] Sloan, S. J. Pelletier (2012). *How accurately may we project tropical forest-cover change? A validation of a forward-looking baseline for REDD.* Global Environmental Change (22)

[18] *Tool for the Demonstration and Assessment of Additionality in A/R CDM Project Activities.*

- ***…ensuring additionality at national/sectoral scale:*** While it is true that GHG emissions at the national scale can be subject to external fluctuations (such as commodity prices, weather, etc.), one can argue that this is no different than similar effects on other sector—for example, how the global recession has affected many UNFCCC commitments and KP targets. Therefore, such challenges are not unique to REDD+ and will be faced by any sectoral approach. The best way to ensure environmental integrity and additionality, therefore, is to set appropriate national baselines.

- ***…difficulties around estimating projected baselines***: Baselines that are derived ex-ante from a BAU projection assume that the host country assumes both the benefits and liabilities if unknown forces (commodity prices, weather, etc.) affect future emissions. One solution would be to allow ex-post adjustments, which would take into account external factors and better reflect the country's real efforts to provide a more precise basis for results-based financing at the sectoral level. However, this solution also presents challenges as to how this might be done.

- ***…difficulties related to calculating BAU for national/sectoral baselines***: Some suggest one way to manage some of the challenges related to creating sectoral crediting baselines is to take a "conservative" approach. For example, to set the baseline some percentage below estimated BAU (see Figure 1. Business as Usual and crediting baselines in REDD+ below), depending on: (a) data availability and modelling capacities (and associated uncertainties) and also (b) taking into account a countries pledge to reduce emissions through self-effort.

- ***…moral hazard in the near-term, prior to a REDD+ financing mechanism in place, if historic baselines are used***: Allow crediting for "early action" and/or set require that historic baselines are based on a period starting before a particular date (e.g. COP-13, when REDD+ was first considered as part of a new agreement).

Figure 1: The difference between Business as Usual and crediting baselines in REDD+

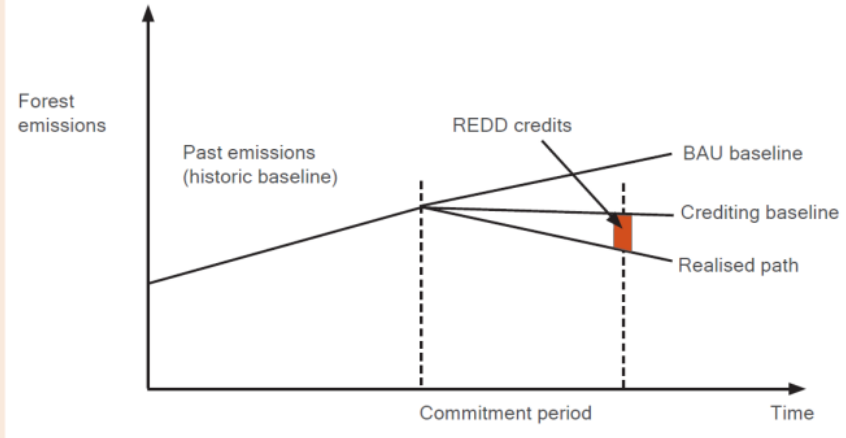

Figure 1. Business as Usual and crediting baselines in REDD+[19]

[19] REDD-net, (2010) *Optimal reference level setting for REDD+*, available at http://redd-net.org

2.2 Leakage

Key Issues

Leakage occurs when emission reductions or removals achieved in one location are negated by increased emissions in another – e.g. protecting a forest from logging has no climate benefits if the logging company moves operations to another site.[20] Leakage can occur at any scale, including project, subnational (state or province), or national.[21] Some project level activities will result in minimal leakage or leakage that can be monitored or estimated with sufficient certainty (e.g. a project that stops unsustainable fuel wood collection and degradation by planting wood lots). Other project types – e.g. stopping illegal logging - are prone to significant leakage that are hard to monitor, and such projects may have questionable environmental integrity and should not be developed as a credible REDD+ project.[22]

Possible Solutions

Addressing REDD+ at larger scales – such as at subnational or national scales – will reduce the likelihood of leakage not being accounted for because larger areas of land are being monitored.[23] However this is only true if a comprehensive monitoring system is established or leakage from one activity to another can be monitored or estimated and accounted for. For example, if a province or country is only monitoring deforestation, a reduction in deforestation may also result in an increase in forest degradation.[24] If only deforestation is being monitored and accounted for, the increased emissions due to the increased degradation will not be captured and leakage will have occurred. As with leakage associated with projects, monitoring and accounting for some forms of leakage outside the subnational or national boundary may also be difficult. Again, a shift in legal and illegal logging is an example of leakage that can be difficult to monitor and account for. Comprehensive monitoring of all forests is expensive, but specific monitoring targeted towards leakage should be more affordable in some circumstances.

While leakage can be an issue for REDD+, there are options to mitigate, monitor and account for many forms of leakage.[25] Leakage mitigation should focus on addressing the drivers of deforestation to reduce leakage risks at any scale. Monitoring and accounting can also be applied at the project and subnational scale. Monitoring of deforestation globally is also possible, though attribution and accounting for international leakage will be more difficult. Still, it should be noted that international leakage is not accounted for in any other sectors under the Kyoto Protocol so arguably should not be raised as a unique criticism of REDD+ *per se*.

---

[20] Wunder, S. (2008) "How do we ensure permanence and assign liability?" in Moving Ahead with REDD Issues, Options and Implications, Arild A (ed), CIFOR 2008.

[21] Leakage is generally categorized into activity shifting, when the deforestation agents simply move their activities outside the project area, and market leakage, when a reduction in the commodity produced in the project area stimulates increased exploitation elsewhere. Lambin, E.F., P. Meyfroidt. (2011). *Global land use change, economic globalization, and the looming land scarcity.* PNAS (108).

[22] Meyfroidt, P., E. Lambin. (2009). *Forest transition in Vietnam and displacement of deforestation abroad.* Proceedings of the National Academy of Sciences (PNAS) (106)

[23] Angelsen, A., C. Streck, L. Peskett, J. Brown, C. Luttrell. (2008). *What is the right scale for REDD? The implications of national, subnational and nested approaches.* CIFOR Info Brief No. 15.

[24] Wunder, S. (2008) "How do we ensure permanence and assign liability?" in Moving Ahead with REDD Issues, Options and Implications, Arild A (ed), CIFOR 2008.

[25] Atmadja S., L. Verchot (2012) *A review of the state of research, policies and strategies in addressing leakage from reducing emissions from deforestation and forest degradation (REDD+).* Mitigation and Adaptation Strategies for Global Change (17)

2.3 Non-Permanence Risk

Key Issues

The risk of non-permanence refers to the risk that emission reductions or removals from forest carbon projects will be lost in the future.[26] This is due to the inherent vulnerability of forests to natural events like fire, pests, and wind damage as well as predisposition to anthropogenic disturbances like logging and agricultural clearing that lead to a loss of forest carbon stocks.

Possible Solutions

Addressing this risk is a question of accounting and how to assign liability. Several approaches to addressing this risk have been proposed.[27]

At the national level, one alternative is to make the government participating in REDD+ responsible for ensuring permanence by accounting for any reversal over time against the national reference level. This in effect passes liability for permanence onto the country.[28]

Another option is to create a buffer or reserve account of credits to counter the risk of future increases in emissions from deforestation. This has been done under VCS and involves setting aside a certain percentage of all credits earned by a developing country and holding that amount in reserve to guard against the reversal of any REDD+ credits.[29] This accounting partially removes the permanence liability from the country by shifting it to the reserve. However, while the buffer approach has been in operation for a number of years under the Voluntary Carbon Standard (VCS) and has over 1 million credits, its long term resilience has not yet been tested and some models have shown scenarios whereby the buffer may become bankrupt over the long term without adequate management or insurance.[30]

Non-permanence risk could also theoretically be managed using traditional tools of the insurance industry. Some have advocated solutions rooted in insurance-based hedging principles where insurance policies and premiums for REDD+ projects would be negotiated up front based on an assessment of project strengths. Project failure would result in the buyer of credits being financially compensated and able to reinvest this in another project, thus achieving permanence through potentially multiple contracts or projects.[31]

A fourth option is the use of temporary credits, as is currently the case for CDM A/R projects.[32] This approach relies on regular monitoring and either re-issuance or re-verification of the credits. If the forest is lost, the credits expire or are cancelled. The temporary nature of these credits assigns liability

---

[26] Dutschke, M., A. Angelsen (2008) "How do we ensure permanence and assign liability?" in Moving Ahead with REDD Issues, Options and Implications, Arild A (ed), CIFOR.

[27] For a more complete review of options see Deutsche M., and Arild A.,(2008) "How do we ensure permanence and assign liability?" in *Moving Ahead with REDD Issues, Options and Implications*, Arild A (ed), CIFOR 2008.

[28] Skutsch, M., E. Trines (2010) *Understanding permanence in REDD.* Kyoto Think Global Act Local Project, Policy Paper no. 6.

[29] Deutsche M., and Arild A.,(2008) "How do we ensure permanence and assign liability?" in Moving Ahead with REDD Issues, Options and Implications, Arild A (ed), CIFOR 2008.

[30] Duke University's Nicolas Institute for Environmental Policy Solutions presentation at World Bank consultation on non-permanence risk, 24th April 2012.

[31] Oosterzee, P., J. Blignaut, C. Bradshaw (2012) *iREDD hedges against avoided deforestation's unholy trinity of leakage, permanence and additionality.* Conservation Letters

[32] Decision 5/CMP.1 2005, Annex, Section A. Definitions paragraph 1(g) "Temporary CER" or "tCER" is a CER issued for an afforestation or reforestation project activity under the CDM which (…) expires at the end of the commitment period following the one during which it was issued; (h) "Long-term CER" or "lCER" is a CER issued for an afforestation or reforestation project activity under the CDM which (…) expires at the end of the crediting period of the afforestation or reforestation project activity sunder the CDM for which it was issued;

to the end user or buyer but has proven very unpopular because of the long term uncertainty associated with these credits.

2.4 Monitoring

Key Issues

Uncertainties regarding monitoring deforestation and degradation were one of the reasons why deforestation was originally excluded from the CDM,[33] and continues to be one of the reasons why the EU does not allow forestry credits into the EU ETS.[34] The primary concern is that poor monitoring of changes in forest cover and/or forest carbon stocks will create high degrees of uncertainty in estimating emissions and emission reductions, thereby raising questions of the environmental integrity of forest carbon credits.

Possible Solutions

Monitoring capacities for assessing REDD+ emissions reductions have improved dramatically in the past decade, with further improvement expected. The technology and methods used for estimation and monitoring of carbon stocks in REDD+ projects are essentially the same as those used in CDM A/R, and the accuracy and uncertainty levels are nearly commensurate. Most CDM A/R methodologies require that above-ground tree biomass be estimated at +/- 10% at a 90% confidence level[35], with other CDM project types like Energy Efficiency Improvement requiring the same confidence level. A number of voluntary project based REDD+ methodologies also require the same estimate of uncertainty applied to all components of project accounting.[36] Uncertainty greater than this limit may be accepted, but the project must make a conservative reduction in claimed emissions reductions to reflect this.

Monitoring of CDM A/R and voluntary REDD+ projects generally relies on the same tools; ground-based measurements of carbon stocks using allometric models to calculate emission factors and remote sensing to estimate area changes of land use and land cover classes. Both project types often rely on remote sensing, although the larger spatial scale of REDD+ projects means that remote sensing is likely more predominant. Recent advances in LiDAR technology enable sampling of much larger areas than can practically be achieved by ground based measurements alone, and permit accurate calculation of carbon stocks at scales meaningful to REDD+.[37]

---

[33] Trines, Evelyn. (2008). "History and Context of LULUCF in the Climate Regime" in *Climate Change and Forests.* Brookings Institution Press, Washington, DC.

[34] O'Sullivan, Robert (2008). "Reducing Emissions from Deforestation in Developing Countries: An Introduction" in *Climate Change and Forests.* Brookings Institution Press, Washington, DC.

[35] CDM – A/R Working Group. Thirty-third meeting report. Annex 2.

[36] See VCS and American Carbon Registry REDD+ methodologies, e.g. *VCS REDD Methodology VM0015, Version 1* (available at www.v-c-s.org) and *ACR REDD Methodology Modules* available at http://americancarbonregistry.org

[37] Asner et al. (2010). *High resolution forest carbon stocks and emissions in the Amazon*. Proceedings National Academy of Science, 107.

3 Current and potential REDD+ supply and demand

Key Message

Biophysical studies, and technical studies (based on economic modelling) indicate potentially very large supply of emission reductions from reducing deforestation (0.4 – 7.9 $GtCO_2e/yr$), yet the true feasible supply is likely significantly less than the highest estimates due to governance capacity and interest of many developing countries (0.54 – 2.4 $GtCO_2e/yr$, depending on price and model). As a comparison, total volume of the carbon market in 2011 was 10.2 $GtCO_2e$ Current supply from the voluntary market is less than this again (with total transacted volume in 2011 for REDD+ representing less than 0.1% of the global carbon market and 0.3% of the global offset market), though increased supply is predicted in the future if there is sufficient demand.

In coming years, Australia and California are the most likely sources of demand for REDD+ for compliance, though future eligibility in each market is still to be determined. Despite minimal compliance demand, voluntary market demand is growing and made REDD+ the most valuable voluntary offset type in 2011. Multilateral and bilateral programs will also boost demand from voluntary markets in coming years. Overall, there is potential for significant supply of REDD+ credits, but lack of demand remains the major constraint.

3.1 Biophysical, Technical, and Feasible Supply of REDD+ Credits

There are a number of different approaches to estimate the potential supply of credits from REDD+ activities using a "top down" approach to attempt to estimate theoretic supply. The literature can be divided into ones that look at historic rates, biophysical supply, technical supply, and feasible supply.

Biophysical estimates look at the potential quantity of emissions reduction credits as equal to the expected net total carbon dioxide *emissions* from tropical forests for the time period in question. The biophysical level will be dependent on how the rates of future deforestation are estimated. This maximum biophysical potential is an unrealistic high point to estimate supply of REDD+ credits as realizing it would require an immediate cessation of all tropical deforestation globally and a 100% conversion of emission reductions into REDD+ credits. It can, however, be a useful starting point and numerous studies have attempted to quantify the potential REDD+ credit supply based on the biophysical potential along with modelling the economic trade-offs between REDD+ activities and drivers of deforestation.

The *technical supply* of REDD+ credits may also be an overestimation because it does not account for the feasibility of implementing REDD+ in many countries given governance, technical and legal capacities, and political will. The actual, or *feasible supply* is likely to be less than the technical supply, and studies of the feasible supply attempt to quantify discounts for factors not included in technical supply studies.

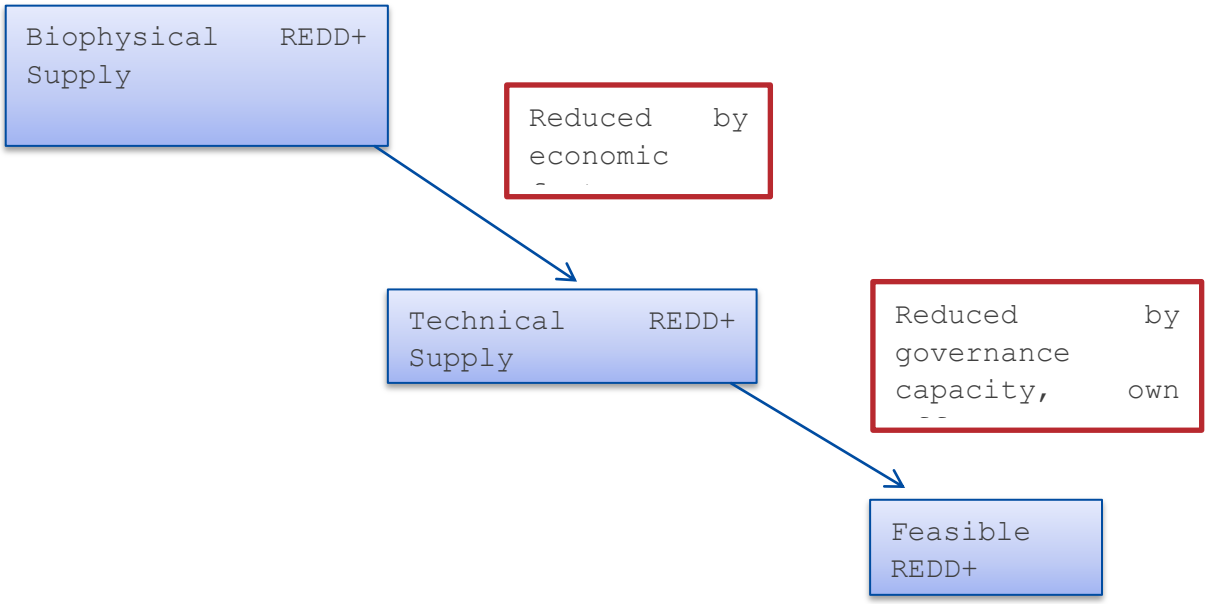

Figure 2 Different approaches to estimating supply of REDD+ credits

Recent Historical Emissions Rates

Recent emissions rates from tropical forests can be useful for comparative purposes. These figures are usually derived from FAO data on net losses or gains in tropical forest area, combined with emissions factor data, usually derived from country level average carbon stocks. The reliability of self-reported data that goes into FAO assessments does have some limitations though. For instance, more recent reliable data has led the 2010 FAO Global Forest Resource Assessment to revise its estimates of 1990—2000 deforestation upward to 16 million ha from the 13 million ha reported in the 2005 assessment.

Table 1: Estimates of historical global tropical emissions

Net Emissions Rate in billions of tons ($GtCO_2$/year)	Time Period
0.57-1.22[38] (gross emissions)	2000—2005
7.4[39]	2000—2005
4.77 +/- 2.57[40]	1990—2007
3.67[41]	2000—2010
5.5[42]	1990—2000

[38] Harris, N., S. Brown, S. Hagen, S. Saatchi, S. Petrova, W. Salas, M. Hansen, P. Potapov, A. Lotsch. (2012) *Baseline Map of Carbon Emissions from Deforestation in Tropical Regions.* Science (336).

[39] Busch J., Strassburg B., Cattaneo A., Lubowski R., Bruner A., Rice R., Creed A, Ashton R. and Boltz F. (2009), *Comparing Climate and Cost Impacts of Reference Levels for Reducing Emissions from Deforestation*, Environmental Research Letters

[40] Pan Y., Birdsey R., Fang J., Houghton R., Kauppi P., Kurz W., Phillips O., et al. (2011), *A Large and Persistent Carbon Sink in the World's Forests*, Science

[41] Pan Y., Birdsey R., Fang J., Houghton R., Kauppi P., Kurz W., Phillips O., et al. (2011), *A Large and Persistent Carbon Sink in the World's Forests*, Science

[42] Gullison R., Frumhoff P., Canadell J., Field C., Nepstad D., Haydoe K., Avissar R., et al. (2007) *Tropical Forests and Climate Policy,* Science Policy Forum

Biophysical Capacity

Projecting future deforestation is complex and actual deforestation rates will be influenced by currently unknown economic and political dynamics. There are three general approaches that can be used to develop a business as usual (BAU) deforestation reference emission level; 1) Simple historical BAU, where past average rate (or trend) is assumed to continue, 2) Adjusted historic BAU, where historical rates are altered to reflect other influential factors such as population growth, economic development, etc., 3) Projected BAU, social, economic, ecological, and political variables are modelled to predict deforestation. Table 2 includes a range of annual reference emissions levels for the period through 2030, or 2050. Historical reference levels are obviously quite sensitive to the time period chosen as the reference period, and as such have significant variability between them.[43]

Table 2: Biophysical estimates based on historic averages and historic adjusted or projected estimates

Historical ($GtCO_2$/year)	Historical Adjusted/Projected ($GtCO_2$/year)
6[44]	4.9[45]
4.4-7.9[46]	5[47]
7.4[48]	5.5[49]

Source: Climate Focus, 2010

Technical Capacity

The technical capacity is a function of deforestation rates, available lands for carbon stock enhancement activities, and the price of carbon credits. The pricing of credits is key as it indicates the competitiveness of REDD+ land uses compared to agriculture or other uses, as well as the amount of funding for implementation.

[43] Coren M., Streck C., Madeira E., (2011) *Estimated Supply of RED Credits 2011-2035*, Climate Policy

[44] Canadell, J.G., Le Que´re´, C., Raupach, M.R., Field, C.B., Buitenhuis, E.T., Ciais, P., Conway, T.J., Gillett, N.P., Houghton, R.A., Marland, G., (2007) *Contributions to Accelerating Atmospheric CO2 Growth from Economic Activity, Carbon Intensity, and Efficiency of Natural Sinks*, Proceeding of the National Academy of Sciences of the United States of America 104(47)

[45] Kindermann, G.E., M. Obersteiner, E. Rametsteiner, and I. McCallum. (2006) *Predicting the Deforestation Trend under Different Carbon Prices*. Carbon Balance and Management 1(15)

[46] Houghton, R.A., (2005) *Aboveground forest biomass and the global carbon balance*, Global Change Biology 11(6),

[47] McKinsey and Company, (2009) *Pathways to a Low-Carbon Economy: Version 2 of the Global Greenhouse Gas Abatement Cost Curve*

[48] Busch J., Strassburg B., Cattaneo A., Lubowski R., Bruner A., Rice R., Creed A, Ashton R. and Boltz F. (2009), *Comparing Climate and Cost Impacts of Reference Levels for Reducing Emissions from Deforestation*, Environmental Research Letters

[49] Sohngen, B., (2009) *An Analysis of Forestry Carbon Sequestration as a Response to Climate Change*, Copenhagen Consensus Center, Frederiksberg, Denmark.

Table 3: Technical global RED and REDD+ credits supply at various price points.[50]

	Deforestation only (RED) ($GtCO_2$)/year	REDD+ ($GtCO_2$)/year
No price	0.7[51]	3.5 - 4.9[52]
<10$/$tCO_2$	1.8[53]	2.7[54] [3.6*]
	0.4[55]	
<20$/$tCO_2$	2.5[56]	4.3[57] [5.2*]
	1.6 - 4.3[58]	
	2.8[59]	
<30$/$tCO_2$	2.8[60]	4.6[61]
	2.8[62]	
	2.9[63]	
>100$/$tCO_2$ or potential	4.5[64]	7.2[65]
	3.1 - 4.7[66]	7.8[67]*

*Includes emissions from peat

Feasible Supply of REDD+ Credits

Implicit within the REDD+ mechanism is the idea that governments can act as rational economic actors with the capacity and willingness to respond to incentives and both choose to undertake REDD+ activities as well as effectively implement and enforce them.[68] Given the fact that many of the countries

---

[50] Coren M., Streck C., Madeira E., (2011) *Estimated Supply of RED Credits 2011-2035*, Climate Policy

[51] Sohngen, B., (2009) *An Analysis of Forestry Carbon Sequestration as a Response to Climate Change*, Copenhagen Consensus Center, Frederiksberg, Denmark.

[52] Grieg-Gran, M., (2008) *The Cost of Avoiding Deforestation: Update of the Report Prepared for the Stern Review of the Economics of Climate Change*, International Institute for Environment and Development, London, UK

[53] Murray, B.C., Lubowski, R., Sohngen, B., (2009) *Including International Forest Carbon Incentives in Climate Policy: Understanding the Economics*, Research Paper 09–03, Nicholas Institute, Duke University, Durham

[54] McKinsey and Company, (2009) *Pathways to a Low-Carbon Economy: Version 2 of the Global Greenhouse Gas Abatement Cost Curve*

[55] Madeira, E., M. Coren, C. Streck. (2010) *The Feasible Supply of RED Credits: Less than predicted by technical models.* Resources for the Future Issues Brief 10-18

[56] Murray, B.C., Lubowski, R., Sohngen, B., (2009) *Including International Forest Carbon Incentives in Climate Policy: Understanding the Economics*, Research Paper 09–03, Nicholas Institute, Duke University, Durham

[57] McKinsey and Company, (2009) *Pathways to a Low-Carbon Economy: Version 2 of the Global Greenhouse Gas Abatement Cost Curve*

[58] Kindermann, G.E., M. Obersteiner, E. Rametsteiner, and I. McCallum. (2006) *Predicting the Deforestation Trend under Different Carbon Prices*. Carbon Balance and Management 1(15)

[59] Madeira, E., M. Coren, C. Streck. (2010) *The Feasible Supply of RED Credits: Less than predicted by technical models.* Resources for the Future Issues Brief 10-18

[60] Kindermann, G.E., M. Obersteiner, E. Rametsteiner, and I. McCallum. (2006) *Predicting the Deforestation Trend under Different Carbon Prices*. Carbon Balance and Management 1(15)

[61] Sohngen, B., (2009) *An Analysis of Forestry Carbon Sequestration as a Response to Climate Change*, Copenhagen Consensus Center, Frederiksberg, Denmark.

[62] Sohngen, B., (2009) *An Analysis of Forestry Carbon Sequestration as a Response to Climate Change*, Copenhagen Consensus Center, Frederiksberg, Denmark.

[63] Murray, B.C., Lubowski, R., Sohngen, B., (2009) *Including International Forest Carbon Incentives in Climate Policy: Understanding the Economics*, Research Paper 09–03, Nicholas Institute, Duke University, Durham

[64] Tavoni, M., Sohngen, B., Bosetti, V., (2007), *Forestry and the carbon market response to stabilize climate*, Energy Policy 35(11),

[65] Tavoni, M., Sohngen, B., Bosetti, V., (2007), *Forestry and the carbon market response to stabilize climate*, Energy Policy 35(11),

[66] Kindermann, G.E., M. Obersteiner, E. Rametsteiner, and I. McCallum. (2006) *Predicting the Deforestation Trend under Different Carbon Prices*. Carbon Balance and Management 1(15)

[67] McKinsey and Company, (2009) *Pathways to a Low-Carbon Economy: Version 2 of the Global Greenhouse Gas Abatement Cost Curve*

[68] Karsenty A., Ongolo S., (2012). *Can "fragile states" decide to reduce their deforestation? The inappropriate use of the theory of incentives with respect to the REDD mechanism,* Forest Policy and Economics (18)

that have the greatest technical potential to generate REDD+ have been poor performers historically in forest governance[69] it is likely that the feasible supply of REDD+ credits is far below the technical supply. Further discounts can be applied for 'own efforts', or emissions generating actions that are unlikely to be marketed as offsets.

Using three different modelling approaches[70,71] the feasible supply of RED credits through 2035 is predicted to be significantly less than the technical supply when factoring in:

- Delays in entering REDD+ schemes (based on World Bank governance indicators)
- Inability or unwillingness to convert GHG reductions from REDD+ into compliance-grade credits (based on general discount factors to reflect governance and interest expressed in REDD+)

Table 4: Estimated feasible supply of RED credits through 2035 using three different models[72,73]

Carbon Credit Price	Annual Supply (RFF FCI Model) ($GtCO_2$/year)	Annual Supply (OSIRIS Model) ($GtCO_2$/year)	Annual Supply (Boucher 2008) ($GtCO_2$/year)
$5-$10	0.54	1.74	0.775
$10-$20	1.35	1.75	1.18-2.4

The potential feasible supply of RED credits has been predicted to be much less than the technical supply, although this is highly sensitive to carbon price. At carbon credit prices between $10-20, both models utilized estimate feasible reductions at close to half of the potential technical reductions.

3.2 Afforestation and Reforestation (A/R)

There are fewer specific estimates of the global carbon sequestration potential of afforestation and reforestation as a separate theme from REDD+. Accurately estimating the long term carbon sequestration potential of unplanted forests comes with obvious difficulties.

Technical Potential of A/R

On the broadest level, there are large areas of the tropics that are biophysically suitable and meet the CDM A/R requirements. One recent study calculates the total area at 749 million ha., or about 9% of the total land area of non-Annex I countries.[74] Large scale analyses of the global carbon sequestration potential of as yet unplanted forests must obviously be considered to be rough estimates. Depending on the CO_2 price, afforestation and reforestation could technically generate significant sequestration

[69] Skutsch M., McCall M., (2010). *Reassessing REDD: governance, markets and the hype cycle,* Climatic Change (100)

[70] The Forest Carbon Index (FCI) model is a GIS based model integrating biophysical carbon storage data with economic data on opportunity costs to determine likelihood of deforestation. It has a higher spatial resolution than OSIRIS 3.0 and for this analysis relied upon a simple historical baseline. The OSIRIS 3.0 tool is a global partial equilibrium economic model and uses country level data with lower spatial resolution and adjusted historical baselines.

[71] Boucher, Doug. (2008) *Out of the Woods: A realistic role for tropical forests in curbing global warming.* Union of Concerned Scientists Publication

[72] Coren M., Streck C., Madeira E., (2011) *Estimated Supply of RED Credits 2011-2035*, Climate Policy

[73] Boucher, Doug. (2008) *Out of the Woods: A realistic role for tropical forests in curbing global warming.* Union of Concerned Scientists Publication

[74] Zomer R., Trabucco A., Bossio D., Verchot L. (2008). *Climate change mitigation: A spatial analysis of global land suitability for clean development mechanism afforestation and reforestation*, Agriculture, Ecosystems & Environment 126(1-2)

ranging from 0.7-2.2 $GtCO_2$ per year.[75] A review of several studies on the topic concluded that global A/R potential could be as high as 7.3 $GtCO_2$ per year.[76]

3.3 The Current and Potential Demand for forestry credits

REDD+ credits are currently limited to the voluntary market, with total transaction volumes being extremely small relative to the total global carbon market (see Figure 3 below).

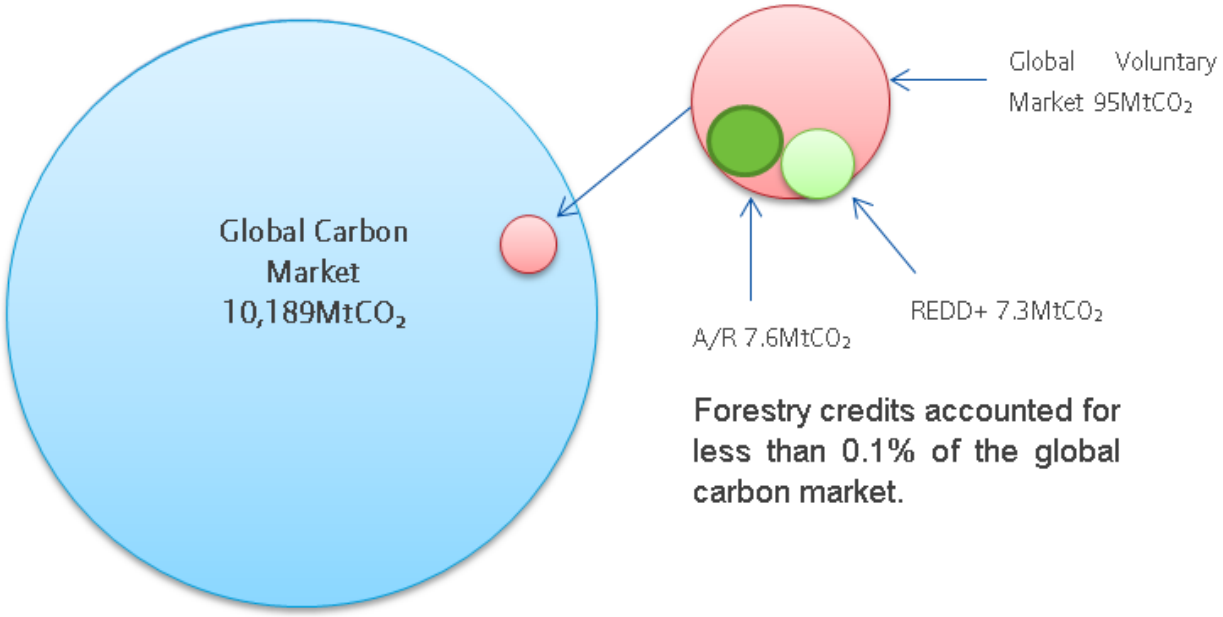

Figure 3: Carbon Market Volumes in 2011. Adapted from Ecosystem Marketplace *State of the Voluntary Carbon Market 2012* and World Bank *State and Trends of the Carbon Market 2012*

As Figure 3 illustrates, the compliance markets dominate the carbon market. Within the compliance market, the allowance market is dominant (8,081 $MtCO_2e$), followed by the secondary market for offsets (1,822 $MtCO_2e$) and finally the primary market for new offsets (378 $MtCO_2e$). Behind these figures comes the voluntary market and then REDD+ which is a subset of this. At 7.3 $MtCO_2e$ in 2011, the current REDD+ market is less than 0.1% of the total market, and 0.31% of the offset market.[77] The market for CDM and JI forestry credits is similarly weak, representing 0.8% and 0.13% respectively.[78]

As the lack of demand for CDM afforestation/reforestation credits in the current market illustrates, the UNFCCC can build a market mechanism that is ineffectual without complementary national compliance systems that drive the demand to create a real market. Because of this, it is useful to assess the acceptability of REDD+ and forest credits more generally within current and emerging GHG emission trading schemes, as well as the potential and acceptability within future domestic systems. A market-by-market analysis is provided below:

---

[75] Sohngen, B., Mendelsohn, R., (2003) *An optimal control model of forest carbon sequestration*, American Journal of Agricultural Economics 85(2),
[76] Richards, K., Stokes, C., (2004) *A review of forest carbon sequestration cost studies: a dozen years of research*, Climatic Change 63,
[77] Kossoy, A., P., Guigon. (2012). *State and Trends of the Carbon Market*. World Bank Carbon Finance Unit.
[78] See table 6 below.

The European Union

The Directive establishing a European Allowance Trading Scheme (EU ETS) made clear that forestry-related credits will remain outside the ETS for the near-term.[79] The European Commission remains concerned that including—assumed to be—cheap and easy REDD+ credits under the ETS could lead to a drop in carbon prices and erode incentives for taking action within the EU territory. This is even more relevant in the current environment, with a glut of allowances and carbon prices at an all-time low. Additional concerns have also historically included leakage and reversals. In this light, most commentators do not believe REDD is likely to be considered within the ETS prior to 2020.[80]

That said, the directive suggested that the EU would work towards establishing an internationally recognized system for REDD+ within the UNFCCC, including a financial mechanism. It also suggested that if a new international agreement on climate change is signed by the European Community that leads to mandatory reductions of emissions exceeding 20% against 1990 levels by 2020, the Commission would assess "afforestation, reforestation, avoided deforestation and forest degradation in third countries in the event of the establishment of any internationally recognized system in this context".[81]

The United States (Federal)

Draft federal legislation for a cap-and-trade regime—which included a potentially significant demand for REDD credits—passed in the House in 2009, but failed in the Senate in 2010. The adoption of new climate change legislation in the near-term is not expected, and therefore demand for forest credits at the federal level from the US is therefore highly unlikely. That said, there has historically been less resistance in the United States to including forests and land use in climate policies and if the U.S. in the future adopted comprehensive climate legislation, there is a strong constituency in the country that would support the inclusion of forest carbon offsets.

The United States (California)

The state of California passed climate legislation that will apply a cap on some entities as early as 2013. A limited number of international credits (up to 8% of a regulated entities emissions), including possibly after 2015 REDD+ offsets, will be accepted for use in California's trading program. International REDD+ credits are likely to operate under state-level accounting agreements, and California signed a memorandum of understanding (MOU) with Chiapas (Mexico) and Acre (Brazil) to cooperate on building these potential linkages. Demand from California is expected to be small, with maximum estimates ranging from 71.5MtCO_2[82]-75.9MtCO_2[83] through 2020 for international offsets but it could present an important early proof-of-concept and build confidence in the market. Currently it appears that Acre and Chiapas could supply most or all of the demand for REDD+ credits. California is also linked to the larger Western Climate Initiative (WCI), a regional trading program that includes four Canadian provinces. Recent news indicates that California will link its cap and trade program and make permits interchangeable with Quebec. The World Bank *State and Trends of the Carbon Market 2012*[84] estimates

[79] EU ETS Linking Directive 2004/101/EC. Amendment to Article 11a "Use of CERs and ERUs from project activities in the Community scheme", 3 (b).
[80] Wehrheim, Peter. (2011) *Forestry in the EU's Climate Policy*. Climate Action presentation.
[81] 2008/0013 (COD) Text adopted by European Parliament.
[82] Point Carbon. April 13, 2012. Carbon Market North America. Volume 07 Issue 14.
[83] Reuters UK. October 28, 2012. *Analysis-high California CO2 prices to spur offset scramble*.
[84] Kossoy, A., P., Guigon. (2012). *State and Trends of the Carbon Market*. World Bank Carbon Finance Unit

that if all four Canadian provinces adopt provisions similar to California, total international offset demand through 2020 could reach 200 $MtCO_2$.

Japan

Japan has been pursuing a "Bilateral Offset Credit Mechanism" that would create new offsets separate from JI and the Kyoto Protocol's CDM. These offsets would be negotiated bilaterally with developing countries. Japan has begun to fund feasibility studies in partnership with Japanese companies in several sectors, and includes a study for peatland management in Indonesia with Shimizu Corporation, and also studies on REDD+ in Peru and Brazil.

Australia

The Australian government passed legislation for a cap and trade program in 2011 that aims to reduce 2020 emissions to 5% below 2000 emissions[85] and 2050 emissions to 80% below 2000 emissions.[86] A cap and trade system will come into effect in 2015, which allows 50% of an emitting entity's liability to be met with international offsets, through 2020. Estimates of demand for international offsets range from 70[87]-104.2[88]$MtCO_2$ per year from 2015-2020. For international REDD+ to be recognized in Australia the government would need to pass additional regulations allowing this. There are also domestic uncertainties including whether the legislation will survive until 2015 in the current political environment and the role that domestic AFOLU offsets will play.

New Zealand

The New Zealand Emissions Trading Scheme (NZ ETS) is designed to cover all sectors—including agriculture and forestry—phasing sectors in over time. The forestry sector was the first to be included in 2008. While New Zealand landowners can generate domestic credits from REDD (and convert them into internationally tradable AAUs), as with the EU ETS, international forestry-based CERs are currently excluded.[89]

Other possible compliance markets

Other low-carbon initiatives, including domestic emission reduction targets, clean energy certificate programs, voluntary and pre-compliance domestic offset trading programs, and carbon exchanges, have gained increasing traction in developing economies such as Brazil, China, India, and Mexico—but remain at a nascent stage. In May 2012, the South Korean government approved a bill to create a nationwide cap and trade system by 2015 to help the country meet its target of cutting carbon emissions below 30% of expected 2020 levels. Specifics of the legislation are currently unavailable, including whether international offsets would be eligible.

---

[85] Carbon Market Institute. *Australia's Clean Energy Legislative Package*. p. 16.
[86] *Clean Energy Act 2011*. Part 1, Section 3 "Objects"
[87] Point Carbon. October 28, 2011. *Carbon Market Australia-New Zealand*. Volume 04 Issue 11.
[88] Reputex Consulting. "Australian firms to buy 520 million CERs by 2020" May 16, 2012. http://www.carbon-ex.lu/news.php
[89] While all Kyoto units are prima facie eligible for use under the New Zealand ETS, additional restrictions have been put on types of Kyoto units during the first commitment period. Additional volume based restrictions are expected in the future. See Section 63 of the New Zealand *Climate Change Response Act* 2002, along with questions and answers on the use of international offsets (http://www.climatechange.govt.nz/emissions-trading-scheme/about/questions-and-answers.html) and Ministry of Environment, *Updating the New Zealand Emissions Trading Scheme :A consultation document* , (2012) Publication No: INF646

Box 2: Brazilian state level ETS's

Several states in Brazil are in the early stages of establishing an ETS which could impact the supply of Brazilian forest carbon credits. In recent months, wealthy industrial states such as São Paulo and Rio de Janeiro have announced plans to launch ETS that could result in demand for forest credits from states sequestering forest carbon, such as Amazonas and Acre. Additionally, the new state ETS may be capable of interlinking with each other and other Brazilian state markets as well as international systems.

At the time of writing, the state of Rio de Janeiro is imminently expected to sign into law an ETS which should go into effect in 2013. The law will stage rules for private companies in five-year intervals starting with an initial period of 2013-2015, with a target to have by 2030 a reduction in emissions intensity to levels lower than that of 2005 in tCO_2e per unit of GDP. The state is in bilateral talks with northern Brazilian states over REDD offsets, which likely would be capped at offsetting 10% of targets in the first compliance period. The system likely will also allow voluntary credits from select emissions standards and sectors. The rules for Rio's carbon market and its targets for the first compliance period are scheduled to be released at the Rio +20 conference in June 2012.

The state of São Paulo has also announced plans to start an ETS by the end of 2012. São Paulo state accounts for one-third of Brazil's GDP, and the state law will reduce its greenhouse gas emissions 20 per cent below 2005 levels to 98 million tonnes of CO_2e by 2020. Given its potentially demand for offset credits to meet this regulatory cap, São Paulo signed a memorandum of understanding with Acre in April 2012 to integrate the new climate legislation in São Paulo with the Acre environmental services system. Although Acre is also in talks with California to participate in its new cap-and-trade system, some experts think São Paulo will provide more demand for Acre credits in a few years than the expected demand from California.

Voluntary markets

Voluntary markets are smaller than compliance markets but are expanding, with growth in total market value from $433 million in 2010 to $576 million in 2011. Forest carbon credits are gaining in market share, and REDD+ specifically had the highest total market value in 2011 of any activity generating voluntary market credits.[90]

Forestry offset projects are considered popular in voluntary markets as they are seen as amongst the most visible and charismatic offset types—often offering poverty alleviation and local community development, forest protection, and biodiversity conservation—and are therefore attractive to "Corporate Social Responsibility" buyers.[91] This is reflected in the high prices REDD+ credits fetched in 2011 ($12.00/$tCO_2$) compared to average prices for voluntary credits ($6.20/$tCO_2$). REDD+ credits are relatively new and sustained demand in voluntary markets is difficult to predict. For example, despite the high value of REDD+ credits in 2011, the total volume transacted actually decreased 59% between 2010 and 2011, although 2011 volumes were still much higher than 2009.

While the growth in voluntary forest carbon credits is encouraging there has been concern of a potential flood of REDD+ credits onto the market. Interviews with key REDD+ credit suppliers indicate a possible

[90] Peters-Stanley, M., K. Hamilton (2012) *State of the Voluntary Carbon Markets.* Forest Trends Ecosystem Marketplace publication.
[91] Peters-Stanley, M., K. Hamilton (2012) *State of the Voluntary Carbon Markets.* Forest Trends Ecosystem Marketplace publication.

oversupply of credits in the next few years, but that this will be significantly less than the drastic flood some have predicted. Key constraints on supply include the lack of demand, high standards imposed by standard creating organizations, and the technical, logistical, and practical difficulties involved in meeting these requirements. Stifled demand is the most significant constraint on supply - large REDD+ projects require significant initial investment and continuing revenue generation to compensate deforestation agents. Current market demand will not meet these requirements for many projects.

Other Sources of Demand

Some countries may be, in the short-term, also interested in the purchase of REDD+ Verified Emission Reductions not used for compliance purposes. For example:

- Norway has offered Indonesia and Brazil up to USD1 billion each, along with up to $250 million to Guyana, $83 million to Tanzania, and $101 million to Congo Basin countries for verified emissions reductions from reducing deforestation.
- Currently 11 donors—including 8 countries, one NGO, and two private sector participants—have pledged an estimated USD213 million, with the eventual target of USD350 million to the Forest Carbon Partnership's Carbon Fund, managed by the World Bank, which will buy verified REDD+ emissions reductions (likely starting in 2012 or 2013).
- The World Bank's BioCarbon Fund has a target of $65 million in Tranche III to support emissions reductions, including from REDD+.
- A 2009 EU directive recommended Member States use 50% of revenues from auctioned allowances for nine different areas (e.g. renewable energy, transport, etc.), including possible support for REDD+ in developing countries.

Overview of Supply and Demand for REDD+ Credits

Table 5: Summarizes the supply and demand dynamics seen in the current and possible future market for REDD+.

Timing	Supply (REDD+ and A/R combined)*	Demand (REDD+ and A/R combined)*	Other Sources of REDD+ Demand ($)
Current (2011, $MtCO_2$)	Voluntary Total: 46[92] Voluntary REDD+:11[92] Voluntary A/R: 21[92] Voluntary IFM: 14[92] (CDM A/R not included)	Voluntary Total: 17.9[92] Voluntary REDD+: 7.3[92] Voluntary A/R: 7.6[92] Voluntary IFM: 3[92] (CDM A/R not included)	FCPF Carbon Fund: $350 million ($213 pledged)[93] BioCarbon Fund: $65 million[94] target (not all for REDD+) Norway: Up to $2.24 billion for Brazil, Indonesia, Guyana, Tanzania, and Congo Basin countries[95]
Future ($MtCO_2$/year)	Current pipeline to 2016: - REDD: 86[92] - A/R: 31[92] Feasible supply* to 2020: - 54-1750[96] - 775-2400[97]	Voluntary: unknown Australia: 70[98] – 104.2[99]** California: 8.9[100] – 9.5[101]**	

* Feasible potential supply is derived from biophysical potential, technical potential based on economic modelling, and feasible potential based on an assessment of governance and willingness of REDD+ countries. The range provided reflects carbon price and usage of different models. **Estimated per year through 2020

[92] Peters-Stanley, M., K. Hamilton (2012) *State of the Voluntary Carbon Markets.* Forest Trends Ecosystem Marketplace publication.
[93] Forest Carbon Partnership Facility. (2012) *The FCPF Carbon Fund: Pioneering Performance-based Payments for REDD+*.
[94] The World Bank. BioCarbon Fund. Tranche III.
[95] The Government of Norway's International Climate and Forest Initiative.
[96] Coren M., Streck C., Madeira E., (2011) *Estimated Supply of RED Credits 2011-2035*, Climate Policy
[97] Boucher, Doug. (2008). *Out of the Woods: A realistic role for tropical forests in curbing global warming.* Union of Concerned Scientists Publication.
[98] Point Carbon. October 28, 2011. *Carbon Market Australia-New Zealand*. Volume 04 Issue 11.
[99] Reputex Consulting. "Australian firms to buy 520 million CERs by 2020" May 16, 2012. http://www.carbon-ex.lu/news.php
[100] Point Carbon. April 13, 2012. Carbon Market North America. Volume 07 Issue 14.
[101] Reuters UK. October 28, 2012. *Analysis-high California CO2 prices to spur offset scramble*.

4 How the inclusion of REDD+ in the CDM could affect the market

Key Message

The market effects of including REDD+ in the CDM are difficult to quantify as they will be influenced by a number of factors. These include (i) how REDD+ is included in the CDM (i.e. the design of REDD+ rules under the CDM) and whether the rules will lead to the generation of credits; and (ii) whether there will be any demand or market for the credits. Currently, forestry projects are insignificant under the CDM (0.9%) and JI (0.3%) due to low demand for temporary credits and technical challenges. In contrast, forestry projects have high penetration in voluntary markets which allow permanent credits and deal with non-permanence through buffers. Demand for REDD+ CERs may only be minimal, as the EU ETS is expected to continue to prohibit forestry projects, although Australian demand could possibly be important if REDD+ does not use CDM temporary crediting rules.

4.1 Design parameters and impacts on supply

How a REDD+ market-based mechanism is designed will have a significant impact on whether or not any REDD+ credits are generated at scale under the CDM. This is evidenced by the current rules for forestry projects under JI, the CDM, and voluntary markets.

Due to a number of technicalities the JI rules do not allow forestry or land use projects that reduce emissions while simultaneously making forest sequestration projects very challenging.[102] CDM forestry projects also face a number of technical challenges and hurdles,[103] one of the most significant of which are the rules to account for permanence. These rules produce different types of temporary credits that are seen as high risk and low value by consumers of offsets.[104] The combination of technical challenges and low demand for JI and CDM forestry credits has resulted in minimal market penetration within either mechanism (see Table 6 below).

[102] See Joosten H., Tapio-Biström M., and Tol S., (eds.) *Peatlands – guidance for climate change mitigation by conservation, rehabilitation and sustainable use*, FAO Mitigation of Climate Change in Agriculture Series (5), (2012); O'Sullivan R. *et al*., *Blue Carbon Policy Options Assessment*, Climate Focus (2011); Schlamadinger B., Streck C., and O'Sullivan R. *Will Joint Implementation LULUCF projects be impossible in practice?*, open letter to JISC (2006);

[103] Locatelli B., Pedroni L., and Salinas Z., "Design Issues in Clean Development Mechanism Forestry Projects", in Streck C., O'Sullivan R., Janson-Smith T., and Tarazofsky R. (eds), *Climate Change and Forests: Emerging Policy and Market Opportunities*, Chatham House, London and Brookings, Washington D.C., (2008)

[104] Lecocq F., and Couture S., "The Permanence Challenge: An Economic Analysis of Temporary Credits" in ", in Streck C., O'Sullivan R., Janson-Smith T., and Tarazofsky R. (eds), *Climate Change and Forests: Emerging Policy and Market Opportunities*, Chatham House, London and Brookings, Washington D.C., (2008)

Table 6: Current market penetration of CDM and JI forestry projects[105]

Mechanism	Number of forestry projects/total *registered* (per cent)	Number of forestry projects/total *in the pipeline*[106] (per cent)	Number of forestry credits projected from total pipeline/ total pipeline for the mechanism to 2012 or 2020 (per cent) ($MtCO_2e$)
CDM afforestation/reforestation	39/4,235 (0.9%)	67/8,584 (0.8%)	20.3/2,677 (0.8%) (2012) 47.5/11,632 (0.41%) (2020)
JI all eligible forestry and land use (A/R only in practice)	1/353 (0.3%)	2/559 (0.4%)	0.98/752 (0.13%) (2012)

In contrast, the voluntary market has a broad variety of project standards that allow a wider range of project types. The voluntary market also deals with non-permanence risk differently than the CDM or JI, with the dominant standard (VCS) employing a buffer approach that allows issuance of permanent credits (see Section 2.3). As a result forestry projects make up a much larger share of the voluntary market (see Table 7) though limited demand is often cited as a significant factor limiting supply.

Table 7: Current market penetration of forestry projects in the voluntary market (2011)[107]

	Afforestation/ Reforestation in $MtCO_2e$ (per cent)	REDD+ in $MtCO_2e$ (per cent)	Forest management in $MtCO_2e$ (per cent)	All forestry/total voluntary market $MtCO_2e$ (per cent)
Volume	7.6 (10%)	7.3 (9%)	3.8 (4%)	18.7/95 (23%)

The number of credits projected to be generated should be contrasted to the studies on technical potential of forestry projects discussed in Section 3.1, that found total global potential for afforestation and reforestation activities to generate anywhere from 0.7[108] – 7.3[109] $GtCO_2$ emission reductions per year. If REDD+ is admitted into the CDM the technical rules on how to develop and register REDD+ activities and rules governing how credits are issued will therefore be important in determining how many activities are registered and credits come to market. Key design issues that will impact market penetration and ability to generate credits include:

- Scale: Whether REDD+ projects can generate credits, or whether credits can only be generated from reductions within a state/province or country as a whole.
- Scope: Whether activities need to cover all 5 REDD+ activities (i.e. whether a reduced deforestation project is possible, or whether the activity must also include accounting for degradation, conservation, forest management, and enhancement of stocks).

---

[105] Data on registered projects from www.unfccc.int. Data on projects under development and projected numbers of credits from http://www.cdmpipeline.org/

[106] Projects in the pipeline refers to projects already registered plus projects that have started the registration process but have not yet achieved registration. A number of projects in the pipeline will never be registered.

[107] Peters-Stanley, M., K. Hamilton (2012) *State of the Voluntary Carbon Markets.* Forest Trends Ecosystem Marketplace publication. (forest management volume derived from per cent figure provided in the report).

[108] Sohngen, B., Mendelsohn, R., (2003) *An optimal control model of forest carbon sequestration*, American Journal of Agricultural Economics 85(2)

[109] Richards, K., Stokes, C., (2004) *A review of forest carbon sequestration cost studies: a dozen years of research*, Climatic Change 63

- Baselines: How a baseline (or reference emission level/reference level) is developed and registered.
- Non-permanence: How the risk of non-permanence is addressed.
- Other eligibility and design criteria, such as start date, safeguards (environmental and social), leakage, and registration processes.

4.2 Impact on demand for CERs from other sectors

Whether or not the introduction of REDD+ into the CDM will have any impact on CERs from other sectors will be determined by regulatory demand for REDD+ CERs. If regional or national compliance markets do not allow REDD+ credits, introducing REDD+ into the CDM may have little, if any, impact on demand for other types of CERs from the compliance market. The only domestic markets that may allow REDD+ in the future if included in the CDM are Australia and potentially New Zealand. Demand from Australia may have some impact on overall demand and prices of CERs generally because the market for offsets is potentially large (50% of compliance obligations can be met with international offsets). The overall price effect on CERs of this increased demand, and any potential dampening by allowing REDD+ into the market was not assessed.

The EU ETS currently bans all forestry credits[110] and is expected to continue to do so in the foreseeable future – including for REDD+. A special Impact Assessment on Deforestation by European Commission staff[111] rejected the notion of linking REDD+ credits to the EU ETS on the basis that the EU would face the risk of oversupply ('flooding') of cheap credits thus diminishing benefits of innovation, energy security and clean air. A strict quota of REDD+ credits was also rejected on the grounds that this created a risk of unwanted windfall profits for the few credits that would enter the market while the vast majority of potential REDD+ credits stayed outside the EU ETS.

The Australian ETS only bans the current temporary credits from CDM forestry projects but allows credits from JI forestry projects and from other forestry activities in Annex B countries. [112] If REDD+ were included in the CDM, it may not be recognized in the Australian system if the temporary crediting approach used for CDM A/R projects was also applied to REDD+. However, this approach is currently being reviewed under the Kyoto Protocol[113] and it is unclear if this or another approach to addressing the risk of non-permanence would be applied to REDD+. If another approach was used, or CDM REDD+ generated a different type of unit, then there may be scope for REDD+ to be recognized for compliance in the Australian scheme,[114] assuming the Australian Clean Energy Regulator did not add any restrictions on importing these credits as was done for other CDM projects.[115] If REDD+ credits from the CDM were

[110] O'Sullivan, Robert (2008). "Reducing Emissions from Deforestation in Developing Countries: An Introduction" in *Climate Change and Forests.* Brookings Institution Press, Washington, DC.
[111] Impact Assessment, Commission Staff Working Document, accompanying document to the Communication from the Commission to the European Parliament et al. addressing the challenges of deforestation and forest degradation to tackle climate change and biodiversity loss, COM(2008) 645; SEC(2008) 2619/2).
[112] See Sections 4 and 61 of *Australian National Registry of Emissions Units Act 2011* which defines an eligible international emission unit, Section 5 and Part 6 of *Clean Energy Act 2011* which sets rules for use of eligible international emissions units, and the website of the Clean Energy Regulator (http://www.cleanenergyregulator.gov.au) which provides additional details what is eligible (e.g. restrictions are placed on large hydroelectric projects and other project types).
[113] Decision 2/CMP.7, *Land use, land-use change and forestry*, paragraph 7
[114] See Sections 4 of *Australian National Registry of Emissions Units Act 2011* which includes in the definition of an eligible international emission unit "(d) a prescribed unit issued in accordance with the Kyoto rules; or (e) a prescribed international unit."
[115] For a list of current restrictions see http://www.cleanenergyregulator.gov.au/Carbon-Pricing-Mechanism/Liable-entities/Managing-my-liability/Emissions-units/Pages/default.aspx

allowed without any restriction these credits could be expected to compete with CERs from other sectors and have an impact on the price and demand for these CERs.

As noted in Section 3.3 above, the Californian market is not tied to the CDM and will not be significant regardless.

5 Benefits and Risks of REDD+ in the CDM

Key Message

Benefits include contribution to sustainable development and increased investment potential in LDCs. Climate mitigation goals could be furthered as REDD+ is seen as a cost-effective emission reduction activity. Further benefits could come from learning-by-doing under the CDM. REDD+ is likely to be integral to a future climate agreement and the inclusion into the CDM would provide lessons and experience under an international compliance market. Risks include further oversupply and price collapse. There are also risks to indigenous groups, local communities and biodiversity if safeguards are insufficient. In general, good design of the mechanism can maximize benefits and mitigate risks.

While Section 4 focused on potential market implications of including REDD+ in the CDM, we now focus on investigating options for *how* to include REDD+ in the CDM and explore the risks and benefits of doing so. Some the risks relate to market flooding discussed above, but a number of new risks are also identified.

So what could REDD+ in the CDM look like? Section 5.1 explores the structural options. If a decision was made to allow additional forest sector activities within the CDM, then several structural options would open immediately, with project-based crediting fitting most easily into existing CDM approaches and rules. If the CDM were to engage in catalyzing reductions through sectoral approaches, sectoral-crediting for REDD+ could be explored.

Both approaches imply benefits and risks to the CDM, which are outlined in SSection 5.2. Benefits include helping the CDM meet its core objectives of incentivizing sustainable development and achieving additional emissions reductions, and offering learning-by-doing opportunities for the CDM of including REDD+. The risks include introducing a potentially large new source of CERs into CDM markets that could further erode carbon prices; introducing "hot air" into the system if REDD+ credits are non-additional or face reversals; and prejudging the UNFCCC negotiations in harmful ways.

REDD+ would also face benefits and risks from being integrated into the CDM (Section 5.3). Benefits include a much needed new source of demand, new learning-by-doing opportunities in the UNFCCC context, and the possible consolidation of a currently fractured methodological landscape, while risks of early inclusion within the CDM context would be posed to future adoption if REDD+ credits do not meet tests of environmental integrity.

Finally, Section 5.4 explores several design elements that could help maximize benefits and minimize risks to both the CDM and REDD+, most notably the use of quantitative limits; limiting scope to a subset of the five core REDD+ activities and designing the mechanism to maximize sustainable development benefits. Section 5.5 summarizes the analysis by contrasting benefits, challenges, and risks of the two broad design options – project and sectoral crediting.

5.1 Structure

Using Existing Approaches

As discussed above, reducing forest-sector emissions were excluded from Kyoto and the CDM for a number of reasons. If the CMP were to revisit this exclusion but otherwise maintain the structure of the CDM largely as-is, this would open the door to three general categories of new REDD+ CDM methodologies: project-based REDD+ crediting at large and/or small scale, sectoral methodologies, and programmes of activities (PoAs, also known as programmatic CDM).

There is growing experience in the voluntary REDD+ market with a range of **project-based crediting** methodologies. There is also a community of project developers, civil society organizations, and at least one multilateral development bank (the World Bank's BioCarbon Fund) supporting methodology development for REDD+ in the voluntary market. These existing project-based REDD+ methodologies closely parallel CDM requirements for defining baselines, determining additionality, etc. The main difference is how they deal with non-permanence risk, which the dominant voluntary market standard – VCS – addresses via a pooled buffer, versus the CDM's temporary credits (tCERs and lCERs) for afforestation and reforestation. As noted above in Section 2, however, there have been many technical developments since REDD+ was first excluded from the CDM that may allow consideration of greater fungibility for land use-related credits. Finally, if the CDM decided to include project-level deforestation, in addition to A/R, as an eligible activity, existing methodologies would likely be quickly adapted and proposed to the CDM, though development of small-scale REDD+ projects may not be appropriate due to leakage. Many would agree that some forms of project-based REDD+ are now technically feasible, even if the UNFCCC process has been focused on national and subnational approaches for REDD+.

Even though technically allowed, very few **sectoral CDM methodologies** have been proposed to date, and none have been approved.[116] Several design elements of the CDM have proven unable to accommodate sectoral approaches – in particular requirements for drawing project boundaries, defining additionality, and constructing baselines.[117] These and other practical difficulties that have held back sectoral CDM methodologies—including a lack of incentives for methodology development by market players—would also apply to REDD+. The complexities of REDD+ may make REDD+ a poor starting choice for the currently envisioned standardized baseline methodologies.

CDM programmes of activities have taken some time to operationalize, but experience with them is now building. PoA's are an unlikely first entrée for REDD+ into the CDM, even though REDD+ activities could conceivably fit within the model and benefit from the efficiencies it offers. PoA's were designed to allow small projects to benefit from efficiencies of scale, whereas the trend in REDD+ has been towards accounting for emissions reductions at larger rather than smaller scales to avoid concerns about leakage.[118] PoA's also require standardized projects, and were designed for replicating small-scale projects. REDD+ doesn't fit this model well, as evidenced by the lack of bundled AFOLU or REDD+ projects in the voluntary REDD+ market to date.[119]

---

[116] VIVID Economics (2012) The Future Context of the CDM. Draft Report for CDM Policy Dialogue

[117] Schneider & Cames (2009), *A framework for a sectoral crediting mechanism in a post-2012 climate regime.* Institute for Applied Ecology Publication

[118] UNFCCC decisions on REDD+ have focused on "national strategies or action plans, policies and measures" (1/CP.13, para 73) and national reference levels with subnational reference levels only as an interim measure (e.g. 12/CP.17,para 11)

[119] VCS has allowed grouped projects, similar to CDM's PoAs, and AFOLU projects are currently in the pipeline but not yet registered (pers. comm.).

Modified Approaches – A Deeper Redesign

A future CDM architecture may open up new options for including REDD+. A new international carbon market mechanism, if it moves away from the current CDM project-based model, will likely move in one or both of two related ways (Figure 4) depending on the outcome of negotiations. First, it may move from project-by-project crediting systems towards sectoral crediting systems, at least for some sectors in some of the wealthier developing countries.[120] Second, with more developing countries likely to take on commitments, a reformed CDM could move away from baseline-and-credit systems (offsets) towards trading systems with a target (cap-and-trade).[121] If the CDM expands in one or both of these directions to adapt to the future context, options for REDD+ within the CDM may include sectoral-based REDD+ crediting, sectoral-based REDD+ trading, or a system somewhere on the spectrum between these two.[122]

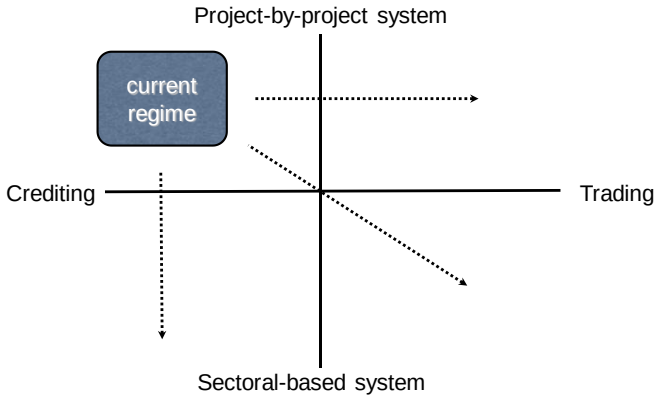

Figure 4: Likely changes of future international carbon market mechanism.[123]

International REDD+ negotiations seem to be headed towards national and subnational[124] activities, which in effect are different scales for **sectoral-based crediting** through which an entire sector's emissions reductions or removals are tracked or credited. Recently adopted and proposed carbon markets, as well as emerging pay-for-performance pilot programs, have also showed a preference for sectoral REDD+, either at the national or large administrative unit scale. For example, California is likely to accept REDD+ offsets only at the State or Province level from a limited number of jurisdictions (see Section 3.3 above). In addition, the Forest Carbon Partnership Facility—which brings together over 40 developed and developing countries to pilot REDD+ results-based finance—also has stated that pilots must be at "sufficient scale, e.g. at the level of an administrative jurisdiction within a country or at the national level."[125] VCS is also expanding its standard to allow for REDD+ baselines to be developed and registered and the "jurisdictional" scale – i.e. country or state or province within a country.[126] The largest bilateral REDD+ partnerships to date—between Norway and Brazil, Indonesia, and Guyana—have

[120] Such a sectoral crediting mechanism is the preferred option of the EU for the new market mechanism in the context of UNFCCC negotiations. EU submission to the AWG-LCA, fourteenth session, (2011) "Views on the Elaboration of Market-Based Mechanisms.", FCCC/AWGLCA/2011/MISC.2

[121] VIVID Economics (2012) The Future Context of the CDM. Draft Report for CDM Policy Dialogue

[122] A project-by-project system operating under a cap, while imaginable, is not an architecture that has been explored for REDD+ in existing or proposed REDD+ markets.

[123] From VIVID Economics (2012) The Future Context of the CDM. Presentation to the high-level Panel for CDM Policy Dialogue, May 31, 2012.

[124] While not yet defined in the UNFCCC negotiations, "subnational" is generally understood to mean a large scale, either of some minimum size or jurisdictional boundaries one level down from national.

[125] FCPF Carbon Fund Issues Note, found at: http://www.forestcarbonpartnership.org/fcp/node/277

[126] See VCS Jurisdictional and Nested REDD+ Initiative (JNR) at http://v-c-s.org/JNRI

also proceeded under a model of results based payments very similar to sectoral-based crediting systems.[127] However, while sectoral-based crediting is gaining traction for REDD+, and while the CDM does theoretically allow sector-based *methodologies*, there are barriers to including sectoral-based *crediting* systems in the CDM.[128]

If developing countries (or large jurisdictions within countries) capped emissions from their forest sectors, additional emissions reductions beneath the cap could be sold internationally under a **sectoral-based trading** architecture. New Zealand provides a precedent for forest sector trading, as forestry was the first sector to phase into the NZ Emissions Trading Scheme.[129] To date, no other developed country emissions trading schemes have included forest-related activities or categories within a cap, even though several have included forest offsets. While this may be in part due to rent-seeking by land- and forest-owners, it is primarily because forest sector trading is generally considered to be technically difficult to implement, requiring regulation of a generally large number of non-standard non-point sources.[130] Developing countries are even less likely to take a sectoral trading approach for several reasons. Capacity limitations compound the technical barriers; developing countries have shown a preference in negotiations for generating only benefits (and not liabilities) from changes in forest-sector emissions through international carbon markets; and finally, even though more developing-country forests are *de jure* government-owned, weak governance and lack of *de rigor* control would make trading difficult.[131] This hesitance appears to be playing out: while several countries submitted forest-based emissions reduction actions in response to the Copenhagen Accord, including sectoral mitigation goals, none—even the more developed such as Mexico and Brazil—have seriously considered a forest sector trading system with a target.

While it seems unlikely that many developing countries will set caps for their forest sectors, some developing countries *are* in fact already setting emissions reductions targets for themselves – including two of the biggest forest emitters globally. Both countries appear committed to self-financing at least some portion of their targets. Indonesia, for example, has set a unilateral target of 26% reduction in total emissions (most of which are from the forest sector), but will pursue a more ambitions 41% target if supported by the international community.[132,133] Brazil has proposed targets for reducing Amazon and cerrado deforestation below business-as-usual by 564 and 104 $MtCO_2e$ respectively in 2020, and has specifically noted that market mechanisms are not excluded for meeting these goals.[134] Both countries could pursue market finance for actions through a sectoral-based crediting architecture by adjusting the reference emissions level downward to reflect any commitments to self-financed reductions (see Figure 4). As such, we will consider this type of arrangement to be a type of sectoral crediting.

5.2 Benefits and Risks to the CDM

[127] See www.regjeringen.no/en/dep/md/Selected-topics/climate/the-government-of-norways-international-.html?id=548491
[128] VIVID Economics (2012) The Future Context of the CDM. Draft Report for CDM Policy Dialogue
[129] Emissions trading Scheme Review Panel. (2011) *Doing New Zealand's Fair Share. Emissions Trading Scheme Review 2011: Final Report.* Wellington: Ministry for the Environment
[130] Gorte, R., R. Johnson. (2009) *Measuring and Monitoring Carbon in the Agricultural and Forestry Sectors.* Congressional Research Service 7-5700.
[131] Agrawal, A., A. Chhatre, R. Hardin. (2008). *Chaning Governance of the World's Forests*. Science (320)
[132] Indonesia submission to Copenhagen Accord: http://unfccc.int/files/meetings/cop_15/copenhagen_accord/application/pdf/indonesiacphaccord_app2.pdf
[133] Fogarty, D. September 29, 2009. *Indonesia CO2 pledge to help climate talks-greens.* Reuters. Accessed on June 27 at http://www.reuters.com/article/2009/09/29/idUSSP495601
[134] Brazil submission to Copenhagen Accord: http://unfccc.int/files/meetings/cop_15/copenhagen_accord/application/pdf/brazilcphaccord_app2.pdf

Benefits

There are several important direct benefits to the CDM of including REDD+ in the near and mid-term. The most important benefits from the perspective of the CDM would be those that meet the CDM's primary objectives of assisting parties in achieving sustainable development, and contributing to climate mitigation.[135]

The CDM to date has had mixed results in generating **sustainable development benefits**, and including REDD+ in the CDM may present an opportunity to improve this record. Several review studies over the past few years have found many CDM projects – especially HFC and N_2O destruction projects – yielded few sustainable development benefits.[136,137,138] Even for project types with stronger evidence of sustainable benefits, some argue there is a trade-off between additionality and sustainable development.[139]

Including REDD+ in the CDM does have the potential to make major direct contributions to sustainable development in new ways and in a critical sector that has to date been excluded. There are fewer formal reviews of the effectiveness of past REDD+ in delivering sustainable development benefits than of the CDM more broadly. However, there are many assessments of individual REDD+ programs and projects that show evidence of such benefits, especially in areas of forest governance and land tenure reform, spatial planning, community forest management, sustainable forest management, maintenance of biodiversity and water provisioning, maintenance of soil fertility, stabilization of local climates, improved resilience to natural disasters and climate changes, generation of non-timber forest products, and improved incomes.[140] At the level of standards, analyses have shown that a number of voluntary REDD+ standards have strong principles and criteria for ensuring poverty alleviation and sustainable forest management benefits.[141]

Including REDD+ in the CDM may also present greater opportunities for investment in emissions reductions and sustainable development in LDCs, helping to shift the distribution of CERs issued by the host country towards a more equitable balance. Forest, agriculture, and land-use emissions make up a relatively larger portion of mitigation potential for many LDCs than for wealthier developing countries (with the possible exception of Brazil and Indonesia).[142] These LDCs—such as the Democratic Republic of Congo, Myanmar, Cambodia, and Zambia—have not had the opportunity to engage in the CDM in any significant way to date[143] – in part due to lack of emission reduction potential in current sectors covered by the CDM and also governance and implementation challenges. REDD+ could change the opportunity and help improve forest governance, though broader governance and implementation challenges will still remain. Even so, REDD+ may be one of the only ways that poor communities in these LDCs could

---

[135] Article 12 of the Kyoto Protocol.
[136] Olsen, K.H. (2007) *The Clean Development Mechanism's Contribution to Sustainable Develoipment: A review of the literature.* Climatic Change (84),.
[137] Sutter, C., J.C. Parreno (2007) *Does the current Clean Development Mechanism (CDM) deliver its sustainable development claim? An analysis of officially registered CDM projects.* Climatic Change (84)
[138] Wara, M. (2007) *Is the global carbon market working?* Nature (445).
[139] Nussbaumer, P. (2009) *on the contribution of labelled Certifed Emission Reductions to sustainable development: A multi-criteria evaluation of CDM projects.* Energy Policy (37).
[140] Secretariat of the Convention on Biological Diversity and GIZ (2011). *Biodiversity and Livelihoods: REDD-plus Benefits.*
[141] Merger, E., M. Dutschke, L. Verchot. (2011) *Options for REDD+ Voluntary Certification to Ensure Net GHG Benefits, Poverty Alleviation, Sustainable Management of Forests and Biodiversity Conservation.* Forests (2)
[142] FAO Global Forest Resources Assessment 2010.
[143] CERs issued by country, cdm.unfccc.int

participate in carbon markets, accessing finance that would allow them to shift from liquidating natural capital assets to maintaining them for sustainable income.

It is difficult to assess whether REDD+ in the CDM would contribute **additional emissions reductions** beyond those achieved by the CDM with its current scope. Adding REDD+ *could* increase overall mitigation if it allowed deeper cuts to be achieved without significant price increases, leading eventually to increased ambition. For example, currently low prices in the EU ETS have led the European Commission to investigate cutting back on the number of permits auctioned in the near term to boost prices,[144] which will increase near term emissions reductions and more efficient long-term emission reduction planning. However, the CDM is currently demand-limited rather than supply-limited and prices are low and expected to remain so in the near- to mid-term.[145] Because of these and other concerns (discussed below under "risks"), some mechanism would likely be needed to limit REDD+ supply into the CDM if indeed CDM moves to include REDD+. For all these reasons, adding REDD+ to the CDM does not appear to be a strong *direct* route to contributing to additional emissions reductions. However, through learning-by-doing on REDD+, increased demand for compliance-grade REDD+ credits in CDM-linked markets, and stronger market signals of REDD+ acceptability (for example), adding REDD+ to the CDM could make important *indirect* contributions to additional emissions reductions from developing country forest sectors.

Certainly including REDD+ in the CDM could harness **cost-effective reductions** globally from a new and under-utilized source. The IPCC Forth Assessment report says "forestry can make a very significant contribution to a low-cost global mitigation portfolio that provides synergies with adaptation and sustainable development." It estimates that deforestation in the tropics have the economic potential to contribute average emission reductions of 1.35 $GtCO_2e$/year at a cost under US$20/ton of CO_2e.[146]

Learning-by-doing

In addition to the direct near term benefits for the CDM of including REDD+ discussed above, there are also a number of longer-term learning-by-doing opportunities for the CDM. REDD+ is likely to be an important element of any new climate agreement, including the one being discussed under the Durban Platform.[147] Including REDD+ in the CDM presents the opportunity—for CDM and for the UNFCCC more broadly—to gain experience with REDD+, whatever its future form. Expanding in this direction could provide an opening for the CDM itself to meet future demand for REDD+ market mechanisms, reducing the need to build parallel crediting mechanisms.

In particular, regardless of whether a new REDD+ mechanism in the CDM is at the project or the sectoral scale, there will be important learning-by-doing opportunities for the CDM. These include, for example:

- Gaining knowledge and experience on monitoring for forest loss and MRV of deforestation and degradation;
- Creating and enforcing environmental and social safeguards;

[144] Bloomberg News. June 22, 2012. "EU CO2 Auction Delay Proposal Said to Face Hurdles in Commission"
[145] Michaelowa A., (2012) *Scenarios for the global carbon markets.* CDM Policy Dialogue.
[146] IPCC (2007). Fourth Assessment Report. Working Group III: *Mitigation of Climate Change*.
[147] See, for example, text from Durban Platform "Reaffirming the principles and provisions set forth in decision 1/CP.16 and appendices I and II on 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"

- Addressing scope issues if a single country pursues both A/R activities as well the five currently defined REDD+ activities;
- Developing methodologies for setting deforestation reference levels;
- Expanding the monitoring and assessment of project safeguards beyond the current CDM system;
- Creating mechanisms such as buffer pools or insurance to address reversal risks.

While most of these learning-by-doing opportunities are not new for the voluntary REDD+ market, they *would* be new for the CDM. They would require new methodologies and approaches to be developed and tested within the CDM context, which has a set of processes, stakeholders, guidelines, and institutional arrangements that are likely to be more similar to a future international REDD+ mechanism than existing voluntary REDD+ systems.

A sectoral approach to REDD+ through the CDM would also provide non-REDD+-specific learning opportunities for the CDM to gain experience with sectoral crediting generally – such as shifting from a model where private entities submit projects and receive credits, to one where governments play a more central role.[148]

In fact, REDD+ has some advantages over other sectors as an initial foray into sectoral-based crediting for the CDM. REDD+ as a sectoral mechanism is more advanced in the negotiations, which is evidence of the broad acceptability this approach to REDD+ with both demand and supply countries.[149] From a technical standpoint, the existing CDM approach to approving baselines and monitoring methodologies, i.e. desk review by the methodology panel, may be more appropriate for some types of REDD+ activities than for other sectors. For example, only limited field measurements may be required to calculate deforestation baselines in areas with good historical satellite imagery,[150] which also significantly reduces information asymmetries between host governments and the methodology panel.[151] There are similar advantages for REDD+ over other sectors at the verification stage.

REDD+ also seems to hold some advantages over other sectors with respect to future demand for sectoral crediting mechanisms. Future commitments by major emerging economies may result in caps for key emitting sectors that would reduce the eventual role for sectoral crediting.[152] However, as noted above, the correlation between wealth and forest sector emissions is weaker than the correlation for sectors such as energy; so it isn't necessarily the case that countries with relatively higher forest-sector emissions are also those countries more likely to adopt caps. In fact, caps for developing country forest sector emissions are unlikely regardless of development status, making learning-by-doing for sectoral REDD+ more critical than for other sectors as a longer-term prospect. The considerations are quite different for REDD+ than, for example, energy sector emissions. Wealthy developing countries may eventually cap energy emissions, and even if they don't they could pursue other sector-based options

[148] Sepibus, J., A. Tuerk (2011). *New market-based mechanisms post 2012: Institutional options and governance challenges when establishing a sectoral crediting mechanism.*

[149] Decision 1/CP.13, *Bali Action Plan.* Paragraph 73. and Decision 12/CP.17 *Guidance on systems for providing information on how safeguards are addressed and respected and modalities relating to forest reference emission levels and forest reference levels as referred to in decision 1/CP.16* . Paragraph 11

[150] Asner, G.P., (2009). *Tropical Forest Carbon Assessment: integrating satellite and airborne mapping approaches.* Environmental Research Letters (4)

[151] Sepibus, J., A. Tuerk (2011). New market-based mechanisms post 2012: Institutional options and governance challenges when establishing a sectoral crediting mechanism.

[152] VIVID Economics (2012) *The future context of the CDM*. Draft Report for CDM Policy Dialogue

under the CDM such as sector-specific standardized baselines and sectoral CDM methodologies. Neither of which is likely nor appropriate for the forest sector.

Risks

One of the largest perceived risks to the CDM of including REDD+ is further oversupply and price collapse.[153] The perception of this risk, based on very large estimates of potential REDD+ supply from theoretical and biophysical approaches (see Section 3.1), should be diminished somewhat by contrasting these large supply estimates to feasible estimates and the current REDD+ pipeline. It is also notable that there were similar fears that A/R credits – with a theoretical supply similar in magnitude to theoretical REDD+ supply – never materialized (although Europe's rejection of CDM A/R has also impacted this). But with the largest current challenge to the CDM that of balancing supply and demand to yield a functional market, this risk would need to be addressed—first and foremost—in any proposal for including REDD+ into the CDM. Design elements that could achieve this are discussed below.

If REDD+ allows (more) non-additional crediting than existing CDM project types, then there is a risk that including REDD+ in the CDM could in fact *increase* overall climate emissions. This risk can be avoided or reduced by, for example, setting the REL/RL in an appropriately conservative manner, and/or reducing the crediting REL/RL for some countries to take into account self-financed efforts (see Section 2.1 for additional discussion). Reversals could yield the same result and can also be readily addressed. The mechanisms for reducing non-permanence risk in CDM A/R projects, ICERs and tCERs, have been largely rejected by the market.[154] But other mechanisms can readily address reversal risks, maintaining additionality with a fully fungible credit (see Section 2.1). If these two issues (permanence and additionality) aren't addressed for REDD+ adequately, it is likely that demand side countries will limit or ban its use in their systems, foregoing the benefits identified above.[155]

There are also very real institutional risks to the CDM of expanding to include REDD+. CDM institutions have been stretched thin, and some of the current proposals for "reformed CDM"[156] such as the use of standardized baselines and benchmarks, would be unlikely to reduce institutional demands placed on the CDM by REDD+. Even with unlimited capacity, there may be procedural risks in introducing REDD+ to CDM. The fundamental procedures and rules at the heart of the CDM may not be sufficient or appropriate for REDD+ architectures, and opening these fundamentals up to debate or change in service of REDD+ may destabilize existing balances. For example, the current methodology development process may be inappropriate for sectoral REDD+, by having a private DOE validate a sovereign's proposed crediting baseline rather than a more appropriate body such as the Expert Review Team or even the EB.

Finally, there are also risks that expanding the CDM to include REDD+ would prejudge negotiations on important (non-REDD+ specific) issues. For example, the shape of a future sectoral mechanism could vary in terms of governance from centralized to decentralized. A sectoral mechanism within the CDM

---

[153] Michaelowa, A. (2012) *Scenarios for the global carbon markets*. CDM Policy Dialogue

[154] Kossoy, A., P., Guigon. (2012). *State and Trends of the Carbon Market*. World Bank Carbon Finance Unit

[155] See Unger, M., C. Streck, D. Lee (2012). *Options for financing REDD+ in the context of EU climate policy: status and opportunities.* Report from Climate Focus and The Nature Conservancy

[156] Michaelowa, A. (2012). Strengths and weaknesses of the CDM in comparison with new and emerging market mechanisms. CDM Policy Dialogue

would likely be highly centralized, and could be seen by proponents of a more decentralized sectoral crediting mechanism (such as California) as biasing future agreements.[157]

5.3 Benefits and Risks to REDD+

Learning-by-doing and other benefits

While there is a nascent and growing voluntary market for REDD+, a new REDD+ mechanism through the CDM would offer additional learning-by-doing opportunities. One route for generating this impact would simply be scaled-up demand for – and hence scaled-up experience with – REDD+. The biggest limiting factor for REDD+ right now is limited demand (see Section 3). Given the size of the CDM market compared to the size of the existing REDD+ voluntary market, allowing a small percentage of the CDM credits to flow to project-based REDD+ could greatly increase relative demand for REDD+. For example, if only 5% of the 263 $MtCO_2$ of primary CER transactions in 2011[158] had been supplied by REDD+, this 13 $MtCO_2$ of hypothetical REDD+ CER volume would be almost twice as large as the actual 2011 voluntary REDD+ transactions of 7.3 $MtCO_2$[159]. In addition to the direct impact of demand for REDD+ CER's, acceptance into the CDM would also make acceptance of REDD+ in other markets (such as Australia) more likely, thereby multiplying the impact to further scale-up REDD+.

If REDD+ were to be included in the CDM, it should be pursued with appropriate provisions for additionality and permanence (see Sections 2.1, 2.3) that would help demonstrate environmental integrity and secure a role for REDD+ as a market mechanism in any new agreement. A new flow of REDD+ credits into compliance markets through the CDM would likely subject REDD+ offsets to a new level of scrutiny by scholars and program evaluation professionals, opening up the opportunity for greater understanding of the results REDD+ generates on the ground in developing countries. This additional scrutiny, together with the CDM's prominent role in global carbon markets, could in fact lead to some consolidation of the currently fractured market of REDD+ standards and methodologies. CDM REDD+ methodologies could become a useful benchmark, making the entire global REDD+ effort more efficient.

Increased demand for REDD+ credits through CDM markets could also help speed developing country capacity-building for better forest governance and management. The earlier phases of REDD+ implementation—capacity building and implementation of policies and measures—have been financed primarily through bilateral and multilateral development assistance and through foundations and NGOs. The opportunity to supply CER's to the CDM in the near- to mid-term would give developing countries additional certainty that they would have a source of finance for phase three of REDD+ that deals with finance for results-based activities.[160] Early adopters would have added incentive to make efficient use of early phase REDD+ finance to prepare for the CER market.

The learning-by-doing opportunities of a sectoral crediting approach to REDD+ through the CDM would not duplicate existing or planned REDD+ crediting schemes. State- and province-level approaches to REDD+ are just starting to get off the ground, for example through the California program and through

---

[157] J. de Sepibus and A. Tuerk, (2011). *New Market-based Mechanisms post-2012: Institutional Options and Governance Challenges when Establishing a Sectoral Crediting Mechanism.*

[158] Kossoy, A., P., Guigon. (2012). *State and Trends of the Carbon Market*. World Bank Carbon Finance Unit

[159] Peters-Stanley, M., K. Hamilton (2012) *State of the Voluntary Carbon Markets.* Forest Trends Ecosystem Marketplace publication.

[160] For a discussion of the REDD+ phases see, for example, www.REDD-OAR.org.

Brazil's provincial program (see text box in Section 1), and both approaches are highly decentralized from an international institutional perspective. The CDM context within the UNFCCC could also raise the profile of host-country deliberations on setting RELs/RLs, and would increase scrutiny by third party validators and the public at large. Finally, the CDM's heavy reliance on DOEs and other consultants in the credit generation pipeline would introduce these key market players to sectoral CDM, building community capacity for sectoral REDD+ crediting.

Risks

One of the biggest risks to REDD+ is the chance that CDM decisions might prejudge the negotiations and make it more difficult to reach consensus on a new REDD+ mechanism under the Durban Platform. As noted above (Section Section1.2) there are many important unresolved issues, such as scale thresholds and other technical issues. It may be difficult for CDM to test REDD+ without taking controversial decisions (but we suggest some possibilities for doing so below).

Environmental and social risks that are associated with REDD+ must be taken into account as well. There are a large number of criticisms and concern that REDD+ can lead to loss of rights, access to forest resources, and tenure claims by local or indigenous groups.[161] Even if there are appropriate social safeguards associated with REDD+, failure to clearly define and adapt these to the norms and laws of countries in which REDD+ is taking place could still result in negative impacts for forest-dependent communities.[162]

Additionally, there are risks to biodiversity if REDD+ causes developing countries to overvalue carbon stocks at the expense of high biodiversity areas and other ecosystem types. Studies have found a strong association of carbon stocks and indicators of biodiversity, but this is not always the case.[163] Low carbon stock, high biodiversity ecosystems could be threatened if REDD+ displaces agricultural exploitation to these areas.

If the CDM does allow a limited amount of REDD+, but fails to institute a well-designed system that delivers on the CDM's mitigation and development objectives, REDD+ crediting could face setbacks. Failure is always the downside risk of early adoption and learning-by-doing. A weak REDD+ platform through the CDM could be worse for REDD+ than no CDM REDD+ - as any failures could propagate negative perceptions of REDD+'s reliability and preclude it in the future from helping the world meet global mitigation and sustainable development goals.

5.4 Mitigating Risks and Maximizing Benefits

Limit demand

The CDM could explore a range of mechanisms to eliminate the risk that REDD+ credits would flood the market for CERs. These could include strict quantitative limits on the number of REDD+ CERs issued or

[161] Crippa L. and Gordon G., *International Law Principles for REDD+: The Rights of Indigenous Peoples and the Legal Obligations Of REDD+ Actors,* Indian Law Resource Centre, May, 2012; Fenton E. (ed), *Realising rights, protecting forests: An Alternative Vision for Reducing Deforestation Case studies from the Accra Caucus*, June 2010; Cotula, L. and Mayers, J. 2009. *Tenure in REDD – Start-point or afterthought?* Natural Resource Issues No. 15., International Institute for Environment and Development, London, UK.

[162] Lyster, R. (2010) *REDD+, transparency, participation and resource rights: the role of law.* Environmental Science and Policy (14)

[163] Strassburg, B., A. Kelly, A. Balmford, R. Davies, *et al.*. (2009) *Global congruence of carbon storage and biodiversity in terrestrial ecosystems.* Conservation Letters (3)

the number used to meet Kyoto targets; a safety-valve mechanism that allowed REDD+ CERs to be used by countries if prices rose above a certain threshold; a carbon bank mechanism that established a CDM REDD+ mechanism with a commitment to purchase REDD+ credits into a credit bank that could be retired for additional reductions or released into the market if prices rise excessively; or a discounting mechanism that converted REDD+ credits to CERs at a fixed or adjustable discount, based on price or other factors.[164] Notably, several of these mechanisms could also mitigate risks of non-additionality or reversal of REDD+ credits. For example, discounting provides an implicit buffer pool against both, and a credit bank provides a time lag between purchase and compliance use of credits that could protect against reversal risk to a degree – as well as the chance that price triggers are never reached.

Limits placed on the demand for REDD+ CER's would mitigate risks, but would also somewhat limit benefits. There are clearly tradeoffs, for example by reducing the magnitude of emissions reductions achieved and the breadth of sustainable development catalyzed. However, some of the benefits of including REDD+ in the CDM—in particular the "learning-by-doing" benefits for both REDD+ and for the CDM outlined above—may by only weakly related to the quantity of REDD+ CER's eventually transacted.

Limit scope

The CDM could choose to experiment with REDD+ by expanding to include only a subset of the five activities listed above. For example, reduced emissions from deforestation (RED) could be allowed as a starting point, but degradation could be delayed as it can be particularly difficult to measure and monitor. Conservation of forest stocks can also be challenging to develop baselines against which credits are awarded if there is no imminent threat to the forest. Allowing deforestation first would also reflect the original accounting rules for Annex B countries under articles 3.3 and 3.4 of the Kyoto Protocol that required Annex B countries account for afforestation, reforestation, and deforestation, while leaving forest management optional (though this is now a mandatory activity since Durban). Because there is already agreement on the five core REDD+ activities, this decision would not handicap future negotiations on possible additional LULUCF activities.

Avoid prejudging negotiations on scale of REDD+ activities

To avoid prejudging the negotiations, the CDM could establish multiple pathways for REDD+ along critical dimensions such as scale. Host countries could choose whether their Designated National Authorities (DNAs) would certify project-based REDD+, sectoral-based REDD+, or some combination. Sectoral could be pursued at the national or subnational scale. Demand countries could similarly choose, as they do now, to accept or not to accept specific categories of CERs verified to one or another methodology.

Design mechanism to maximize sustainable development and promote strong safeguards

It is critical that any new REDD+ mechanism through the CDM, if pursued, supports sustainable development as well as additional mitigation. It is well understood that there are two threshold requirements for ensuring that REDD+ delivers sustainable development benefits: first, that there are sound institutional foundations and strong forest governance, and second that there are robust

[164] VIVID Economics (2012) The Future Context of the CDM. Report for CDM Policy Dialogue

environmental and social safeguards.[165,166] The importance of safeguards was enshrined by the Cancun Agreements, in which the COP:

> "Affirms that the implementation of REDD-plus activities should include the promotion and support of a number of safeguards, including consistency with the objectives of national forest programmes and relevant international conventions and agreements, consistency with the conservation of natural forests and biological diversity ensuring that REDD-plus actions are not used for the conversion of natural forests, addressing the risk of reversals and reducing the displacement of emissions."[167]

Safeguards to protect biodiversity and natural forests have been further supported by the COP which requires:

> "actions are consistent with the conservation of natural forests and biological diversity, ensuring that [actions to undertake the 5 REDD+ activities] are not used for the conversion of natural forests but are instead used to incentivize the protection and conservation of natural forests and their ecosystem services, and to enhance other social and environmental benefits"[168]

There are good models in the voluntary market of strong safeguards systems for REDD+ crediting, such as the project-based Climate, Communities, and Biodivesity Alliance (CCBA) standards and the REDD+ Social and Environmental Standards (SES), which are designed for jurisdictional scale REDD+. Multilateral initiatives are also in the process of developing safeguard rules and guidance. The World Bank's Forest Carbon Partnership Facility requires that participating countries develop Environmental and Social Management Plans (ESPM) based on a Social and Environmental Assessment (SESA) particular to each country. UN-REDD has established Social and Environmental Principles and Criteria which could also serve as a potential guide. In all cases, the CDM could learn from the strengths and weaknesses of existing safeguard systems to create an effective and practical safeguard system.

To increase the sustainable development benefits of CDM REDD+, the CDM could consider supplementing the current method of certification by DNA's with additional national- or subnational-level prerequisites or minimum criteria for participation. For example, the CDM could only allow crediting for REDD+ if countries have successfully demonstrated sufficient safeguards have been developed and are operational.

There may be tradeoffs between maximizing sustainable development benefits and pursuing emissions reductions through REDD+. The countries most able to participate in a REDD+ market-mechanism in the near term tend to be the wealthier of the developing countries. However, it is expected that the opportunity to participate in market mechanisms provides an incentive for less developed countries to undertake the difficult work of REDD+ readiness and forest sector governance reform, and there are substantial existing bilateral and multilateral mechanisms to provide such assistance.

---

[165] Katerere, Y. (2012) *REDD+ lessons for sustainable development.* Climate Change: the New Economy

[166] Secretariat of the Convention on Biological Diversity and GIZ (2011). *Biodiversity and Livelihoods: REDD-plus Benefits*

[167] Decision 1/CP.16. *The Cancun Agreements: Outcome of the work of the ad Hoc Working group on Long-term Cooperative Action under the Convention.*

[168] Decision 1/CP.16 Appendix I, paragraph 2.

6 Conclusion: Options for including REDD+ in the CDM

Key Message
There are four potential options for the inclusion of REDD+ in the CDM. Option (i) maintaining the status quo and excluding REDD+, would avoid risks but also lose potential sustainable development, learning-by-doing, and climate mitigation benefits. Option (ii) permitting limited project-based REDD+, would provide limited benefits but expose the CDM and REDD+ to some risks that larger scale acceptance would not, such as greater leakage potential. Option (iii) piloting sectoral RED focused only on deforestation initially would provide many of the desired benefits but new processes might still overwhelm CDM institutions and developing countries would lose project-level benefits. Finally, option (iv) is a combination of (ii) and (iii).

Based on our research and analysis, we suggest the Panel consider the following four options to including REDD+ in the CDM within the context of reforming the CDM, offering opportunities for learning-by-doing, and consideration of the benefits and risks of expanding the CDM:

1) Maintain the *status quo* that excludes REDD+ from the CDM;

2) Allow additional REDD+ activities, beyond afforestation and reforestation, into the CDM project-based crediting;

3) Pilot sectoral "RED" crediting starting with deforestation reductions only; or

4) A combination of (2) and (3) above.

There are advantages and drawbacks of each option. Doing nothing avoids real risks but foregoes important potential benefits. Additional project-based crediting would fit most easily within the existing CDM and would present some learning-by doing and development benefits, but would likely face opposition and exclusion from important demand countries' systems (such as the ETS) and risks prejudging negotiations. Allowing sectoral RED crediting in the CDM would be more challenging, but could yield relatively more sustainable development and learning-by-doing benefits for both REDD+ and the CDM than project-based approaches. The fourth option, opening the CDM to both project *and* sectoral REDD+ approaches and allowing experimentation by both host countries and demand-side trading systems, may present the best of both worlds with less risk of prejudging the negotiations.

Each scenario would require considerations of design elements to minimize risks and maximize benefits. In all scenarios, a similar set of elements – such as employing quantitative limits, and requiring strong environmental and social safeguard systems – would be required.

For any of the options that expand the CDM to include REDD+, we also recommend the following **design elements** be included to manage and mitigate risks and maximize benefits:

1) Limiting demand for such new activities to manage potential market-flooding, using a quantitative limit or other mechanism that could be determined by additional analysis.

2) Limiting the initial scope, with options to phase in other activities—such as reduced emissions from forest degradation or conservation of forest carbon stocks—that involve more complex technical requirements, at a later stage.
3) Requiring strong social and environmental safeguards, guided by agreements under the UNFCCC.
4) Requiring a buffer reserve, insurance, or other mechanism to protect against reversals.
5) Supplementing DNA approval with institutional or third-party review to ensure that projects generate sustainable development benefits.
6) Providing guidance to ensure RELs/RLs reduce, as practicable, leakage and non-additional tons.
7) Limiting projects to large-scale only, based on a minimum areal extent.

6.1 Status Quo – Exclude REDD+ from the CDM

First, and most obviously, the panel could recommend that the CDM maintain the status quo on REDD+. This path of least resistance would **avoid downside risks** to the CDM of:

- Increased supply and further decreases in prices for CERs
- Emissions reductions that may be (or at least may be perceived to be) less than fully additional
- Stretching CDM institutional capacity thin or in destabilizing directions, and
- Taking decisions on REDD+ that could prejudge the negotiations on REDD+ or on new market mechanisms more broadly.

But significant potential **benefits would be foregone**, losing the opportunity to:

- Increase contributions to sustainable development and reduced deforestation in countries and sectors not currently engaged in the CDM in a significant way
- Deliver additional climate mitigation by harnessing cost-effective emissions reductions
- Contribute to global learning-by-doing for both REDD+ and for the CDM
- Prepare the CDM for a possible role in a future Durban Framework agreement
- Contribute to a consolidation of a currently fractured REDD+ crediting landscape, increasing efficiency of the entire REDD+ endeavor, and
- Speed developing-country forest-sector capacity building for REDD+.

This option, i.e. that the CDM maintain its current acceptance of project-level afforestation/reforestation only and exclude other REDD+ activities or options, would convey a lack of confidence in the long-term potential scope and impact of the CDM, a lack of vision for the CDM as providing an innovative laboratory for market-based climate mitigation, and most important would forego important opportunities for the CDM to meet its core missions.

6.2 Expand Project-Based CDM to include additional REDD+ activities

The second option is for the Panel to recommend that the CDM expand eligibility for new types of forest-sector projects beyond the currently allowed afforestation and reforestation. This option has already been contemplated. The CMP requested investigation of the options for expanding a work programme on the topic by SBSTA providing a clear pathway forward for achieving an expansion of the CDM to REDD+, if desired:

CMP.7, Decision 2 "*Requests* the Subsidiary Body for Scientific and Technological Advice to initiate a work programme to consider and, as appropriate, develop and recommend modalities and procedures for possible additional land use, land-use change and forestry activities under the clean development mechanism with a view to forwarding a draft decision on this matter to the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol for adoption at its ninth session;"

The **benefits of project-based REDD+** in the CDM with the above design elements would be:

- Increased opportunity for sustainable development benefits of the CDM.
- Increased engagement of developing countries, particularly LDCs, in emissions reductions.
- Additional cost-effective climate mitigation opportunities, possibly increasing ambition.
- Learning-by-doing for the CDM on executing RED in UNFCCC context.
- Contribution to learning-by-doing through increased actions and possibly some reduced fragmentation of project-based REDD+ methodologies.
- Maintaining existing CDM processes and institutions.

Even if the design elements above were to be incorporated, expanding the CDM to additional project-based REDD+ activities would **expose the CDM and REDD+ to risks**, including:

- Issuing CERs that may be (or may be perceived as) not fully additional due to leakage risks.
- Prejudging the negotiations on REDD+ in favor of a project-based approach.
- Low acceptance of CDM REDD+ credits by key demand countries, such as the EU ETS, therefore limiting benefits.

6.3 Piloting Sectoral "RED" at National or Interim Subnational Scale

Currently, there are technical, data, and capacity challenges for most countries to participate in a full sectoral crediting mechanism that requires "MRV" of all forest activities/categories. However, many countries are building monitoring systems that, as a first step, will enable them to measure national and/or subnational deforestation at scale. In this regard, many countries are interested in incentives for simply reducing emissions from deforestation, or participating in an early "RED" mechanism—with options to expand to other forest-related activities later as their ability to measure degradation and regrowth improve.

The **benefits of sectoral-based "RED"** in the CDM would be similar to Option 2 and include:

- Increased opportunity for sustainable development benefits of the CDM.
- Increased engagement of developing countries, particularly forested countries with a higher level of development and stronger governance, in emissions reductions.
- Additional cost-effective climate mitigation opportunities, possibly increasing ambition.
- Learning-by-doing for the CDM, particularly in testing methods for REDD+ in particular and sectoral crediting in general.

However, opening the CDM to sectoral RED would **expose the CDM and REDD+ to risks**, including:

- Requiring substantial new CDM processes, possibly overwhelming CDM institutions.
- Excluding LDCs that may be able to participate at project but not national or large subnational scale.

6.4 Pilot sectoral RED, and allow new project types in the context of a national or interim subnational REDD+ framework.

A fourth option is to combine Options 2 and 3 with some modifications to allow piloting of national or interim subnational sectoral RED, while also allowing new REDD+ project types, but only in the context of a national REDD+ framework. Projects would be allowed only if a national monitoring system and appropriate institutional frameworks that avoid double-counting were in place, and the projects were "nested" within national or interim subnational accounting and reporting systems. Such an approach, if subject to the design elements enumerated below, would:

- Avoid prejudging the negotiations.
- Provide the maximum benefits and other learning-by-doing opportunities for both the CDM and REDD+.
- Minimize risks, as long as demand and/or quantitative limitations are put in place.

6.5 Summary Analysis

Error! Reference source not found. summarizes the comparative benefits, challenges, and risks of the four primary design options for including EDD+ in the CDM.

Table 8: Summary of Benefits, Challenges, and Risks of Key Design Options

(🟢 = low risk and/or high benefit 🟡 = medium risk and/or benefit 🔴 = high risk and/or low benefit)

Option:	Status Quo: exclude REDD+ from CDM	Expand project-based CDM to include additional REDD+ activities	Pilot sectoral "RED" at national or subnational scale	Pilot sectoral RED and allow projects in the context of national or subnational systems	Brief explanation
Meets objectives of CDM					
Promotes sustainable development	🔴	🟡	🟢	🟢	Projects promote sustainable development in limited geographic areas, while sectoral crediting at larger scales promotes improved governance, policies, and practices in the forest sector more broadly. The combination can achieve both according to host-country capacity.
Delivers additional mitigation	🔴	🟡	🟢	🟢	Additional mitigation potential is possible with REDD+, but sectoral crediting is expected to generate larger volumes if implemented successfully.
Harnesses cost-effective reductions	🟡	🟢	🟢	🟢	Both sectoral- and project-based REDD+ would be expected to generate low-cost emissions reductions.
Maximizes participation by developing countries	🟡	🟡	🟡	🟢	Project-based REDD+ would maximize participation by LDCs; sectoral crediting would maximize participation by wealthier developing countries; the combination could achieve both.
Creates risk of disenfranchising indigenous peoples or local communities	🟢	🟡	🟡	🟡	Existing COP decisions reduce risk, which can be further reduced by appropriate guidance on safeguards including implementation, reporting and verification.
Creates risk of negatively impacting biodiversity	🟢	🟡	🟡	🟡	Existing COP decisions reduce risk, which can be further reduced by appropriate guidance on safeguards including implementation, reporting and verification.
Learning-by-doing for CDM					
Builds knowledge and capacity for REDD+ in UNFCCC context	🔴	🟢	🟢	🟢	Both project and sectoral REDD+ would provide new learning-by-doing for CDM on forest sector MRV, safeguards, reference levels, and addressing

					reversal risk.
Prepares CDM for a role in UNFCCC new market mechanisms	🟡	🔴	🟢	🟢	REDD+ may be the best option for a new sectoral CDM mechanism. Sectoral crediting would require new approaches to setting reference (emission) levels that would involve host-country governments. The combination could provide this benefit with less risk than pursuing sectoral alone.
Avoids risks to CDM					
Limits CER supply increase	🟢	🟡	🟡	🟡	Including any REDD+ in CDM could exacerbate oversupply problem. Mechanisms to limit demand can apply to project or sectoral REDD+ or the combination.
Minimizes institutional demands on CDM	🟢	🟡	🔴	🔴	Moving from temporary crediting to another approach would create additional institutional demand. CDM could begin allowing REDD+ projects using existing project cycle and institutions, *mutatis mutandis*. Sectoral crediting for REDD+ may require substantial change to basic institutions and processes. Pursuing both increases institutional demands beyond either option alone.
Limits risk of environmentally questionable or "non-additional" CERs entering the market	🟢	🔴	🟡	🟡	Environmental integrity risks are generally considered higher for leakage at the project scale, but baseline setting at larger scales can also contain risks.
Learning-by-doing and other benefits for REDD+					
Increases demand for REDD+	🔴	🟡	🟢	🟢	Allowing REDD+ into the CDM may create new demand for REDD+; in general sectoral REDD+ may see broader acceptance.
Consolidates fractured REDD+ market	🔴	🟢	🟢	🟢	Any expansion option could allow CDM REDD+ methodologies to become a benchmark for REDD+.
Doesn't prejudge negotiations	🟢	🟡	🟡	🟢	Pursuing only project-based or only sectoral-based REDD+ in CDM would likely be seen as prejudging the negotiations; allowing both could minimize impact. Some decisions on critical open issues might need to be taken regardless.
Extends REDD+ experience beyond existing mechanisms	🔴	🟡	🟢	🟢	Project-based REDD+ in CDM would provide a new interface for market-based REDD+ to the UNFCCC context. Sectoral REDD+ in CDM achieves this and more, including negotiation RELs/RLs with governments in multilateral context.
Speeds developing-country capacity building	🔴	🟡	🟢	🟡	Governments would see more incentive to pursue REDD+ capacity building and forest sector governance efforts under a sectoral approach. Allowing countries to choose project-based REDD+ instead could reduce this benefit.