INTERNATIONAL TROPICAL TIMBER COUNCIL

Distr.
GENERAL

ITTC(LI)/8
5 October 2015

Original: ENGLISH ONLY

FIFTY-FIRST SESSION
16 - 21 November 2015
Kuala Lumpur, Malaysia

Developments in UNFCCC regarding Forests and their Potential Implications for Tropical Forests and the World Tropical Timber Economy

[Decisions 2(XXXIX) and 1(XLI)]
(Provisional Agenda Item 14)

Prepared by
Juergen Blaser and Oliver Gardi
Bern University of Applied Sciences
October 2015

1 Introduction

This document is a follow up on ITTC Decisions 2(XXXIX) and 1(XLI) requesting updated information on major developments in tropical forests related issues in the decisions and related discussions under the United Nations Framework Convention on Climate Change (UNFCCC) and in the Intergovernmental Panel on Climate Change (IPCC).

It covers progress made since the 50th Session of the ITTC in November 2014[1]. Specifically, it updates ITTC on the REDD+ policy framework under the UNFCCC and recent developments (incl. SBSTA-42), the progress of major arrangements for REDD+ preparation and implementation, as well as the developments and outlooks of REDD+ finance and markets. The report further provides an outlook on the period up to 2020, when a new climate agreement is expected to enter into force.

Two main annexes have been added to this report. Annex A provides a list of ITTO Producer Member Countries showing their engagement in major REDD+ initiatives; a reference is also made to the inclusion of forestry in the countries' Intended Nationally Determined Contributions (INDCs) for those countries that have submitted an INDC to the UNFCCC Secretariat. Annex B provides an updated summary of knowledge about the physical relations between tropical forests and climate change; this annex is mainly based on the 5th Assessment Report (AR5) 2013/14 of the IPCC.

2 Prior REDD+ Decisions and current stage

REDD+ has been one of the important elements of the international negotiations and discussions of UNFCCC since the Bali Action Plan of 2007, which provides a basis for subsequent negotiations on REDD+. The Copenhagen Accord (2009) recognizes the crucial role of REDD+ and the need to enhance sequestration of atmospheric CO_2 by forests and agrees to provide positive incentives through the immediate establishment of mechanisms including REDD+. COP-16 of UNFCCC in Cancun in December 2010 provided guidance on REDD+ activities and safeguards for REDD+ and approved a SBSTA work programme on policy approaches and positive incentives on issues relating to REDD+[2]. COP-18 of UNFCCC in Doha in December 2012 decided on a work program on results-based finance for REDD+ in 2013 with the purpose to scale up and improve the effectiveness of REDD+ finance. COP-19 agreed on the so-called Warsaw framework for REDD+, as described beneath.

The few remaining issues for a complete REDD+ package remained unresolved at COP-20. They include issues relating to safeguards, non-carbon benefits; and nonmarket-based approaches (see chapter 3).

1 The present report is the 7th report prepared since 2007. Each report has made particular emphasis on topics that were considered of particular importance in a given year. In this report, emphasis has been given on the numerous international initiatives ongoing on REDD+ and generally on the role of tropical forests in climate change mitigation.

2 COP-16 decision (1/CP.16) adopted under the Cancun Agreement in 2011 defines the scope of five REDD+ activities, as outlined in the first paragraph under Chapter 3. The decision also calls for developing country Parties to undertake the following activities: (a) Design a national strategy or action plan on REDD+; (b) Establish a national forest reference emission level and/or forest reference level or, if appropriate, as an interim measure, sub-national forest reference emission levels and/or forest reference levels; (c) Design a robust and transparent national forest monitoring system for the monitoring and reporting of activities; and (d) Design a system for providing information on how the agreed social and environmental safeguards are being addressed and respected.

3 UNFCCC REDD+ Policy Framework — A Summary[3]

REDD+ recognizes five activities that developing countries can do to earn compensation from developed countries: Reducing emissions from deforestation; Reducing emissions from forest degradation; Sustainable management of forests; Conservation of forest carbon stocks; and Enhancement of forest carbon stocks.

After years of deliberation on REDD+, COP-19 (Warsaw in 2013) adopted the "Warsaw Framework for REDD", which consolidated and complemented previous UNFCCC requirements and guidance on REDD+.

As shortly outlined in Chapter 2, policy issues that remained unresolved in Warsaw were: Further guidance on safeguards (12/CP.17 para 6); Ways to incentivize non-carbon benefits (1/CP.18 para 29b); and Consideration of how non markets-based approaches, such as joint mitigation and adaptation approaches for the integral and sustainable management of forests could be developed to support the implementation of REDD+ (1/CP.18 para 39 recalling 2/CP.17 para 67), see beneath.

SBSTA 42 in June 2015 agreed on draft decisions to address these outstanding agenda items. With the expected adoption of these draft decisions at COP-21 in Paris (30 Nov. to 11 Dec. 2015), the UNFCCC framework of requirements and guidance on REDD+ can be considered as complete, after 10 years of negotiation. This would mean that a complete policy framework for implementing REDD+ in tropical forests will be in place by end of 2015.

Measurement, reporting and verification

REDD+ should be implemented in three phases[4], with phase III consisting of result-based actions that are fully measured, reported and verified (MRV). This includes measurement of anthropogenic forest-related emissions by sources and removals by sinks, i.e. forest carbon stocks and changes in forest carbon stocks and area resulting from the implementation of REDD+ activities. In addition countries must monitor and report on emissions displacement (leakage) at national levels.

Requirements:

- Data used for MRV in relation to REDD+ activities, must be consistent over time and with the established or updated forest REL/RL
- MRV has to be integrated into a National Forest Monitoring System
- Results are expressed against the REL/RL in tons of CO2 per year
- Apply any MRV guidance developed for NAMAs
- Most recent IPCC guidelines shall be used as a basis for MRV
- General reporting is through Parties' biennial update reports, with some flexibility for least developed countries and Small Island developing States
- In the context of result-based payments, Parties should supply detailed information in a technical annex
- A team of experts, incl. two LULUCF experts, one from a developing and one from a developed country will assess
    - the accuracy of results;
    - the consistency with the assessed reference level;
    - the consistency with the guidelines provided by UNFCCC;
    - the transparency, consistency, completeness and accuracy of information
- A report of the technical assessment will be published on the REDD+ information hub on the UNFCCC website.

[3] Section based on a review by Climate Law and Policy (2015) *Unpacking the UNFCCC Framework for REDD+: The requirements for implementing REDD+ under the United Nations Framework Convention on Climate Change.*
[4] Phase 1: readiness; phase 2: policy and measures and phase 3 implementation of REDD+

Forest reference emission levels (REL) and forest reference levels (RL)

REL/RLs are benchmarks against which the performance in implementing REDD+ activities will be assessed through measurement, reporting and verification of CO_2. Submission is voluntary, but a requirement for countries aiming to access REDD+ result-based payments.

Requirements:

- Consistency with the country's GHG inventory
- Established transparently, taking into account historic data and updated periodically
- Step-wise approach in order to improve them by incorporating better data, improved methodologies and, where appropriate, additional pools.
- Sub-national RELS/RLs may be elaborated as interim measure.
- Should follow the most recent IPCC guidelines and guidelines adopted by COP-17.
- REL/RLs submitted to the UNFCCC secretariat will be subject to technical assessments according to the procedures defined in the Warsaw REDD+ Framework

National forest monitoring systems (NFMS)

The NFMS is the physical and technical system for gathering data required for MRV and is therefore a pre-requisite for REDD+ result-based payments. It is acknowledged that NFMS may provide further relevant information to demonstrate how safeguards are being addressed and respected.

Requirements:

- Should build upon existing systems
- Should enable the assessment of different forest types, including natural forest, as defined by the country
- Be flexible and allow for improvements
- Reflect the phased approach to REDD+
- Combination of remote sensing and ground-based carbon inventory approaches

Safeguards

COP-16 in 2010 adopted a set of safeguards[5] for the implementation of REDD+ activities. Since then, safeguards have become a central part of the REDD+ mechanism which have to be promoted and supported. Countries aiming at result-based payments have to provide a summary of information on how the safeguards are being addressed and respected in the implementation of REDD+ activities. Therefore a Safeguards Information Systems (SIS) has to be established that meets the following requirements:

- Country driven and implemented at national level;
- Building upon existing systems;

[5] Seven safeguards have been defined in COP-16:

a) That actions complement or are consistent with the objectives of national forest programmes and relevant international conventions and agreements;
b) Transparent and effective national forest governance structures, taking into account national legislation and sovereignty;
c) Respect for the knowledge and rights of indigenous peoples and members of local communities, by taking into account relevant international obligations, national circumstances and laws, and noting that the United Nations General Assembly has adopted the United Nations Declaration on the Rights of Indigenous Peoples;
d) The full and effective participation of relevant stakeholders, in particular indigenous peoples and local communities, in the actions referred to in paragraphs 70 and 72 of this decision;
e) That actions are consistent with the conservation of natural forests and biological diversity, ensuring that the actions referred to in paragraph 70 of this decision 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;
f) Actions to address the risks of reversals;
g) Actions to reduce displacement of emissions.

For a critical review on the meaning of the safeguards, see http://www.redd-monitor.org/2015/03/20/redd-safeguards-what-are-they/

- Being transparent, flexible and allow for improvement over time;
- Providing transparent and consistent information that is accessible by all relevant stakeholders and updated on a regular basis

Specific requirements for the reporting of safeguards are an outstanding issue that is discussed in the next section.

Drivers of deforestation

At COP-13 in Bali, the issue of drivers of deforestation was raised and countries were encouraged to explore options and undertake efforts to address the drivers of deforestation. Although the UNFCCC REDD+ framework recognizes the importance of addressing the drivers of deforestation and forest degradation, it does not set out any specific requirements for countries.
The Warsaw Framework for REDD+ simply encourages country Parties, multilateral, governmental and non-governmental organizations, as well as the private sector to take action to reduce drivers of deforestation and forest degradation and to share the results of their work on this matter on the UNFCCC's REDD+ web platform.

Finance and result-based payments

The discussions on how to finance REDD+ have been ongoing since COP-13 and progress on clarifying the source and channels of funding for REDD+ has been slow. The UNFCCC Framework for REDD+ clarifies a few important issues linked to results-based finance, but with a number of major gaps (e.g. how to address scaling up finance for REDD+). The UNFCCC Framework for REDD+ basically remained unresolved at COP-20; the following joint recommendations were made:

- The need to scale up and improve the effectiveness of finance for REDD+;
- That finance for REDD+ can come from different sources (public, private, multilateral, bilateral, …);
- That market-based approaches could be developed to support result-based actions;
- That adequate and predictable financial and technological support for all phases of REDD+ is necessary;
- That finance for REDD+ activities will be channeled to developing countries through funding agencies such as the Green Climate Fund;
- That existing and potential REDD+ funding agencies should coordinate their support better and ensure alignment with UNFCCC rules;
- That an 'information hub' should be established on the UNFCCC website, that provides information on REDD+ activities, including results-based payments, technical reports that describe how emission reductions are calculated, national forest strategies and action plans, information on how safeguards are addressed and respected, and more.

Requirements for receiving REDD+ result-based payments:

- Measuring, reporting and verification of GHG emissions and removals resulting from REDD+ activities (MRV) following UNFCCC guidance;
- Information on how safeguards have been addressed and respected;
- Having in place a) a national strategy or action plan; b) a national forest reference level (or sub-national as interim measure); c) a robust national forest monitoring system; and d) a system for providing information on how safeguards are being addressed and respected.

Institutional arrangements

The UNFCCC framework for REDD+ sets out certain institutional arrangements that are expected to be implemented at the country level:

- National REDD+ entity or designate a focal point to serve as a liaison with the UNFCCC for REDD+ related matters.
- Nominate entities to obtain and receive results-based payments, in compliance with the requirements of the entities providing the payments.

No decision has been made on creating an international institutional arrangements for REDD+, such as a 'body, board or committee' to improve the coordination of support for the implementation of REDD+ activities. However, national REDD+ entities or focal points, countries and relevant financing entities are encouraged to meet regularly to share information and experiences, as well as cooperatively identify gaps, needs, and good practices on REDD+ activities and financing arrangements. The UNFCCC Secretariat has been asked to facilitate the organization of these meetings. The SBI (Subsidiary Body for Implementation, one of two permanent subsidiary bodies to the Convention established by the COP) is requested to review those meetings and to provide the COP-23 with recommendations on institutional arrangements.

UNFCCC REDD+ Framework – Outstanding issues before COP-21

The REDD+ issues discussed in this section remain unresolved so far. In June 2015, SBSTA-42 adopted draft decisions on all those issues that are expected to be adopted by COP-21 in November 2015 in Paris (see above). These decisions would conclude the development of methodological guidance on REDD+ in the UNFCCC after 10 years of discussion.
Despite this, a number of issues linked to the provision of finance for REDD+ still remain without concrete solution, in particular how REDD+ finance will be scaled up to a level that is predictable and adequate. The next step in negotiations is thus to fit this mechanism into the structure of the post-2020 climate regime i.e. to link it with a possibly future flexible / market mechanism similar to the Clean Development Mechanism (CDM) developed under the Kyoto Protocol.

Further guidance on safeguards (12/CP.17 para 6);

Further guidance on the summary of information on how safeguards are addressed and respected, which will be provided regularly through the national communications, include:

- Information is required on which REDD+ activities are considered in the summary of information on how safeguards are addressed and respected.
- Summaries should include a) Relevant national circumstances; b) Description of safeguards; c) Description of existing systems and processes; and d) Information on how each of the safeguards has been addressed and respected.
- Summaries should follow a stepwise approach, i.e. improve the information provided and data quality over time.

Ways to incentivize non-carbon benefits (NCB, 1/CP.18 para 29b);

Non-carbon benefits (sometimes referred to as ‚co-benefits', or, multiple benefits') refer to the wide range of potentials the implementation of REDD+ activities have for social, environmental and governance improvements6.

6 Social benefits of REDD+ activities may include, among others, providing "opportunities for wealth creation and well-being," "enhancing population's security," and "facilitating the empowerment of individuals and communities." Environmental benefits may range from biodiversity conservation to increased resiliency of ecosystems and improved ecosystem services, such as water regulation and erosion control. Governance benefits include progress toward secure land tenure, and increased levels of transparency and local participation in policies and systems that affect the management of forest resources (Conservation International 2014)

- The importance of incentivizing non-carbon benefits for the long-term sustainability of the implementation of REDD+/SFM activities is “reaffirmed”
- Reporting on NCBs is voluntary and does not constitute an additional requirement for receiving support for REDD+ or results based payments
- NCBs are acknowledged as being “unique to countries´ national circumstances.”
- Developing countries seeking support for the integration of non-carbon benefits into their REDD+ activities “may provide information” with regard to “the nature, scale and importance of the non-carbon benefits.”

Consideration of how non market-based approaches, such as joint mitigation and adaptation approaches (JMA) for the integral and sustainable management of forests could be developed to support the implementation of REDD+ (1/CP.18 para 39 recalling 2/CP.17 para 67)

The term “alternative policy approaches” refers to a proposal by Bolivia entitled “alternative policy approaches, such as joint mitigation and adaptation for the integral and sustainable management of forests” (JMA). It is intended to provide an alternative to REDD+ as a mechanism that incentivizes both mitigation and adaptation and one that provides ex-ante finance for adaptation rather than being focused on mitigation and ex-post (results-based) payments.

- Policy approaches, such as JMA is ‘one’ alternative to results based payments
- Alternative approaches, incl. JMA are subject to methodological guidance for REDD+, including on safeguards
- Developing countries seeking support for JMA may develop national strategies / action plans for REDD+ activities, identify support needs; and develop proposals showing how JMA contributes to REDD+
- Financing entities such as the GCF are encouraged to provide financial resources for alternative approaches, including JMA

4 REDD+ Implementation arrangements

In this chapter, the multilateral initiatives are presented here with reference to some major bilateral arrangements in ITTO producer countries as they could be identified.

The table beneath summarizes the major (pilot) initiatives and make reference to the phased approach on REDD+ (Phase I Readiness; Phase II: Policy and Measures; Phase 3 Implementation of results-based payment. Reference is also made to the amount of financial resources pledged and to disbursement of funds (September 2015, no guarantee of completeness).

Table 1: Global and regional/national multilateral arrangements for REDD+, their targeted REDD+ phases and financial status. Figures on financing were obtained from most recent fund documents (see description in the text). Additional figures (in brackets) were obtained from www.climatefundsupdate.org

	REDD+ Phase I	REDD+ Phase II	REDD+ Phase III	Pledged mUS$	Deposited mUS$	Disbursed mUS$
GLOBAL INITIATIVES						
FCPF Readiness Fund	X			369	(298)	30
UN-REDD Programme	X	X		(268)	256	138
FIP		X		785	(517)	14
GEF-5 SFM/REDD+ Incentive Mechanism (2010-2014)	X	X		250	250	*176**

FCPF Carbon Fund			X	(470)	(258)	0
Sustainable Forest Landscapes	X	X	X	(356)	*NA*	*NA*
REDD+ Early Movers	X	X	X	(172)	*NA*	*NA*
REGIONAL / NATIONAL INITIATIVES						
Congo Basin Forest Fund	X	X		(186)	(164)	*NA*
Brazil Amazon Fund	X	X	X	(1034)	(901)	*NA*
Guyana REDD+ Investm. Fund	X	X	X	250	*NA*	30
Norway-Indonesia Letter of Intent	X	X	X	1000	*NA*	*NA*

*so-called incentive envelop; a total of 700 million $ has been mobilized by GEF that leveraged $4.6 billion in co-finance from a range of other sources.

REDD+ Phase I — Readiness:

Different multilateral programmes and bilateral initiatives support developing countries in preparing themselves for a UNFCCC REDD+ mechanism. It includes a) consultations with stakeholders, b) the preparation of an institutional and legal framework, analytical work and a strategy for implementing REDD+, c) the establishment of a reference level and a national forest monitoring system for MRV, and d) the establishment of a safeguard information system SIS.

FCPF Readiness Fund

As of May 2015 (PC19), the Forest Carbon Partnership Facility is supporting Readiness processes in 47 developing countries (18 Africa, 18 Latin America and 11 Asia-Pacific). 45 countries formally presented their R-PP's and 32 countries (+8 since PC18 in November 2014[7]) have signed preparation grants of $3.6 - $3.8 million each. Another 8 countries are expected for signature of preparation grants in the remainder of 2015[8]. 9 countries (+3[9]) submitted mid-term progress reports and 2 (+1[10]) signed grants for additional $5.2 million for Readiness support. Another 3 countries are in the process of signing additional grants[11]. DR Congo and Costa Rica are so far the only countries that finished the Readiness process and submitted the R-package in October 2015.

A total of $369 million are committed to the FCPF Readiness Fund (+ $11 million since PC18 in November 2014, thereof $3 million from Finland who joined the PC in February 2015). Grants of $201 million (+ $9 million) are allocated to countries, thereof $128 million (+ $32 million) is under signed agreements. Also disbursement of grants has increased rapidly to a total of $30 million (+ $8 million).

Currently, a second external evaluation of the impacts of the FCPF Readiness Fund is ongoing. Interim findings are expected by PC20 that will be held from 4-6 November 2015 in San José, Costa Rica.

UN-REDD Programme

As of PB14 in May 2015, UN-REDD program has a total of 60 partner countries (27 Africa, 16 Latin America and 17 Asia-Pacific). Thereof 37 countries and selected regions (e.g. small Pacific islands) receive targeted support in the six work areas MRV and Monitoring (18), Governance (25), Stakeholder Engagement (13), Safeguards and Multiple Benefits (13), Private Sector and Green Economy (9) and Knowledge Management

[7] Bhutan, Burkina Faso, Colombia, Fiji, Nigeria, Sudan, Togo, Vanuatu
[8] Argentina, Belize, Dom. Rep., Madagascar, Pakistan, Panama, Thailand, Uruguay
[9] Mexico, Republic of Congo, Vietnam
[10] Ghana
[11] Costa Rica, Indonesia and Liberia

and Communications. UN-REDD count on National Programs in 19 countries (11 active[12], 8 closed), for 4 countries signatures are pending, another 3 countries are in the pipeline and 14 countries expressed interest for national programs.

As of May 2015 total funds deposited are $256 million (+ $10.1 millions), whereof $138 million disbursed by the end of 2014. A new Fund is under preparation for the UN-REDD Strategic Framework 2016–2020, which is currently under elaboration, based on the results of the external evaluation conducted in 2014. PB15 will be held from 7-10 November 2015 in San José, Costa Rica.

REDD+ Phase II:

Transformative investments in policy reforms and measures are required for addressing drivers of deforestation and enabling the reduction of deforestation. In order to participate in a result-based REDD+ mechanism to be established in a post-2020 climate regime, countries have to put in place the legal and institutional basis for effectively implementing a sustainable management of their forest land and reforestation activities, taking into account impacts to be expected from climate change (e.g. on carbon permanence).

Forest Investment Program (FIP)

The Forest Investment Program (FIP) is a window of the Climate Investment Funds (CIF) of the Multilateral Development Banks. It supports developing countries' efforts to reduce emissions from deforestation and forest degradation and promote sustainable forest management and enhancement of forest carbon stocks.

By December 2014, a total of US$ 785 million have been pledged to the FIP. 38 investment plans and concepts have been endorsed, totalling to US$ 501.3 million. US$ 296.3 million have been approved for 17 projects and programs, expected to leverage a total of US$ 740.5 million in co-financing. Projects in Lao PDR and Mexico are under implementation and disbursing FIP resources, a total of US$ 13.9 million by June 2014.

US$ 420 million are allocated to 8 pilot countries:

- Brazil, Burkina Faso, DRC, Ghana, Indonesia, Lao PDR, Mexico and Peru.

In 2015, based on a thorough assessment of proposals, the deliberation of an expert panel and a decision meeting of FIP participants, six new pilot countries were included in the program:

- Congo Republic, Côte d'Ivoire, Mozambique, Nepal, Ecuador and Guatemala.

Nine more countries were provided with funds for the preparation of investment plans:

- Tunisia, Bangladesh, Zambia, Cambodia, Cameroon, Guyana, Honduras, Rwanda, and Uganda.

Global Environment Facility

GEF-5 SFM/REDD+ Incentive Mechanism (2010-2014). The GEF-5 SFM/REDD+ strategy was developed to expand on the experience with the financial incentive mechanism pioneered under the GEF-4 with the Tropical Forest Account, to include all countries with forests of global importance. For this purpose, the GEF-5 replenishment established a separate funding window of $250 million operated as an incentive mechanism for countries to enhance financing of their forests. The mechanism encouraged countries to invest resources in improved forest management and, by incentivizing countries to bring together significant fractions of their country STAR[13] allocations from biodiversity, climate change and land degradation, it provided the necessary financial means for more comprehensive SFM/REDD+ projects and programs to generate multiple global

[12] Cambodia, Colombia, Ecuador, Nigeria, Panama, Papua New Guinea, Paraguay, Bolivia, Republic of Congo, Sri Lanka, Zambia

[13] STAR is the System for Transparent Allocation of Resources through which the GEF allocates resources in an indicative way to its eligible countries in a replenishment period. STAR covers three focal areas biodiversity, climate change and land degradation

environmental benefits. The portfolio of projects and programs implemented was driven by two key objectives: (i) To reduce pressures on forest resources and generate sustainable flows of forest ecosystem services; and, (ii) To strengthen the enabling environment to reduce greenhouse gas emissions from deforestation and forest degradation and enhance carbon sinks from land use, land use change and forests (LULUCF) activities

The GEF-6 SFM Program (2014-2018). The GEF-6 SFM Strategy builds on the successes of the GEF-5. It gives special consideration to Least Developed Countries and Small Island Developing States by streamlining access to a $250 million envelope and providing effective incentive to those countries facing the greatest challenge in programming investments in SFM at an ecologically and operationally significant scale with a target of over $700 million total spending on forests. The goal for the GEF-6 SFM strategy is to achieve multiple environmental benefits from improved management of all types of forests, supporting the shift from governance with single sector focus towards management across institutional, sector and commercial boundaries.

REDD+ Phase III:

Finally, developing countries should receive predictable and adequate support for achieved results on forest carbon emission reduction, i.e. the reduction of forest-based emissions below the reference level. The following programms are pionieering such result-based payments.

Carbon Fund (of FCPF)

As of August 2015, 11 countries have presented so-called ER-PINs *(Emission Reduction Project Idea Notes)* and are listed in the Carbon Fund pipeline[14] (same as at PC18 in November 2014). Eight (8) thereof have signed a Letter of intent (+3)[15], the others are expected to sign a Letter of intent in 2015. DRC and Costa Rica have submitted in early October 2015 their Draft ER-PDs *(Emission Reduction Project Document)* that constitutes the basis for signing an Emission Reduction Purchase Agreement (ERPA) with the Carbon Fund. While these activities are still in an initial stage (e.g. the ER-PDs are now under a scrutiny of Expert Panels), there is potential for expansion of the pipeline. Further 12 countries have presented early ideas for ER programs[16].

A total of about $451 million[17] has been committed to the FCPF Carbon Fund.

In June 2014, Carbon Fund participants indicated a willingness to pay up to $5/tCO2. ERPA General Conditions have been adopted by PC18 in November 2014. The development of ER Buffer Guidelines is currently underway. At PC19 the term of the fund has been extended from December 2020 to December 2025[18]. External evaluation of the impacts of the FCPF Carbon Fund is ongoing together with the evaluation of the FCPF Readiness Fund.

BioCarbon Fund

Over the past decade, the BioCarbon Fund spearheaded the development of forest carbon projects for carbon markets under the CDM and voluntary markets. It committed about $90 million from public and private sources to 25 projects in 15 countries that have restored 150'000 ha of degraded lands and reduced deforestation in over 350'000 ha of land. It is closed to new fund participation.

The newest initiative operational since November 2013 is the BioCarbon Fund ***Initiative for Sustainable Forest Landscapes (ISFL)*** seeks to promote reduced greenhouse gas emissions from

[14] Chile, Costa Riga, DR Congo, Ghana, Guatemala, Indonesia, Mexico, Nepal, Peru, Republic of Congo, Vietnam
[15] Chile, Costa Rica, DR Congo, Ghana, Republic of Congo (+ Mexico, Nepal, Vietnam)
[16] Argentina, Cameroon, Côte d'Ivoire, Dom. Rep. Fiji, Guyana, Laos, Madagascar, Mozambique, Nicaragua
[17] Due to weakening of Euro, Norwegian Kroner and Pound Sterling against US dollar; initially US$ 470 million
[18] Pending approval by the World Bank's Board of Executive Directors

the land sector, from deforestation and forest degradation in developing countries (REDD+) and from sustainable agriculture, as well as smarter land-use planning, policies and practices. The initiative will deploy results-based finance to incentivize changes at the landscape level. With about US$ 380 million contributed by Norway, UK and US in 2013, the ISFL has established two programs in Ethiopia and Zambia. Two further programs in Colombia and Indonesia are currently under consideration. US$ 88 million are allocated for technical assistance, US$ 268 million for result-based payments.

Bilateral Agreements

With up to US$ 517 million per year, Norway's International Climate and Forest Initiative (NICFI) is by far the largest REDD+ donor. Beside in its engagement in multilateral initiatives, Norway has entered into bilateral agreements with Brazil, Ethiopia, Guyana, Indonesia, Mexico, Tanzania and Vietnam. Other major bilateral programs have been established by the US, Germany, Japan and the UK. Some elements of performance-based payments were included in these agreements. The agreements and the aid experience up to today provide valuable lessons for the design and implementation of future REDD+ mechanism. A selection of three major bilateral arrangements is described in the following paragraphs.

Guyana REDD+ Investment Fund (GRIF): The Guyana REDD+ Investment Fund (GRIF) provides an amount up to US$ 250 million to create an innovative climate finance mechanism ensuring that REDD+ funds adhere to the Partner Entities' financial, environmental and social safeguards. The GRIF receives payments for forest climate services provided by Guyana; and transfer these payments and any investment income for projects and activities that support the implementation of Guyana's low carbon development strategy. Projects must adhere to REDD+ principles and to the guidelines of Guyana's Low Carbon Development Strategy. Funds have been provided by Norway and the World Bank and UNDP supports Guyana in managing the fund.

Norway- Indonesia Letter of Intent on REDD+: In May 2010, Norway signed a letter of intent (LOI) with the Indonesian government to provide US$ 1 billion for REDD+ finance between 2010 and 2016. The fund addresses the three phases of REDD+ development including a preparatory strategy and institutional development phase (by end 2010); a readiness phase supporting activities such as land tenure reform and a national moratorium on new forestry concessions (2011-2013); and a contributions for verified emission-reductions phase which will allow for international emission reduction payments through a fund mechanism (2014 onwards). Norway provided $200 million for the first two phases up to 2014, with the remaining planned to reward the performance-based emission reductions.

REDD+ Early Movers: The REDD+ Early Movers Programme is a global initiative of the German Government, supporting jurisdictional REDD programmes at national or subnational level (emphasis on REDD Phase-2 level). The programme started 2012 with an agreement signed with the state of Acre (two result-based payments made). US$ 9.6 million are made available for technical Readiness support, EUR 56.6 million result-based payments (5 $/tCO$_2$). The program´s duration is from 2012–2019 and is thereby contributing to the closing of the pre-2020 funding gap (bridging finance).
At COP-20 in Lima, Norway joined the programme and it was announced that arrangements will be made with two new countries, Ecuador and Colombia. Arrangements are in advanced stage of negotiations. Norway will provide about US$ 40 million, Germany US$ 9.6 million for each country as payments for verified emission reductions in the period 2015-2017. Further, a scoping mission is scheduled for Peru and an Asian country under pre-scoping.

Voluntary Carbon Markets

About 338 forest carbon projects are currently being developed and implemented in 52 countries[19]. In 2014 offsets transacted from forest carbon projects accounted for 31.4 MtCO2 (more than half of all volume

[19] CIFOR Global Database of REDD+ and other Forest Carbon Projects: http://www.cifor.org/gcs/redd-map/

transacted on voluntary markets) led by avoided deforestation at 25 $MtCO_2$. 10 $MtCO_2$ thereof were contracted by Germany's and Norway's REDD+ Early Movers program that that signed a payment for perfomance arrangement with Ecuador over $50 million.

Although forest carbon offsets dominated the carbon market in 2014, there was a large over-supply with offsets of about 44 MtCO2 that remained in the portfolio of the project developers and an additional, unused potential of about 32 MtCO2.

The price paid by the Early Movers Program ($5/t CO2) is higher than the average price which in 2014 was at $4.3/$tCO_2$ for REDD offsets ($3.1/$tCO_2$ from avoided *planned* deforestation (e.g. through land-use planning/conversion forests and $5.2/$tCO_2$ from avoided *unplanned* deforestation). REDD offsets labeled with the Climate, Community, and Biodiversity Standards (CCB) sold for an average of $2.7 more per tonne. Offsets from agroforestry, tree planting and forest management projects were much smaller in quantities, but were sold at average prices of $8–9/$tCO_2$.

Investment in forest carbon projects is dominated by a few large-scale projects. The Verified Carbon Standard (VCS), which is the one with the highest market share, indicates that about 80% of the offsets from avoided deforestation are issued by only 10% of the registered projects.

The situation on carbon markets might change moderately in mid-term, as both the World Bank's BioCarbon Fund and the Carbon Fund of its Forest Carbon Partnership Facility (FCPF) intend to pay for avoided deforestation emission reductions on a performance basis. However, significant up-scale of carbon markets can only be expected with compliance schemes that are to be established under the UNFCCC and will not enter into force before 2020.

Other climate-change related initiatives relevant for SFM in the tropics

NAMAs

Under the Bali roadmap, the UNFCCC asked developing countries to formulate so-called nationally appropriate mitigation actions (NAMAs), i.e. national programs to reduce GHG emissions. With regard of the funding of NAMAs, three types can be distinguished:

i. unilateral NAMAs financed domestically;
ii. supported NAMAs with any kind of international support; and
credited NAMAs receiving support through crediting.

Out of the 34 ITTO producer member countries, 18 submitted national targets to the UNFCCC secretariat, 14 thereof mentioning measures that the country will undertake in the forest sector, many of them mentioning their engagement in REDD+ (see Annex A).

Twelve (12) of the ITTO producer countries are developing specific sectoral NAMA programs (59 in total). However, only three programs are linked to forestry (Costa Rica, Indonesia and Mali). In general, although most developing countries mention forestry as a priority in their national mitigation plans, only 8 out of 157 NAMAs currently under development are linked to the forestry sector. This is probably due to the so far unclarified relationship between NAMAs and REDD+.

<u>NAMA Partnership</u>

The NAMA Partnership, launched at COP-18 in Doha in 2013 emerges as a group of multilateral organizations, bilateral cooperation agencies and think tanks that have come together to work on Nationally Appropriate Mitigation Actions (NAMAs). The international partnership on NAMAs has been created with the objective to enhance collaboration and complementarity of the activities of the different organizations to accelerate support to developing countries in preparation and implementation of their NAMAs. The partnership aims to identify best practices and share knowledge to facilitate the preparation and implementation of NAMAs in developing countries, among others. the partnership works to identify best

practices and share knowledge to inform the preparation and implementation of NAMAs through three working groups: (i) Working Group on Finance (WG–Finance); (ii) Working Group on Sustainable Development (WG–SD); and (iii) Working Group on Measuring, Reporting and Verifying (WG–MRV).

NAMA Facility

The NAMA Facility was created in 2013 by the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) and the Department of Energy and Climate Change (DECC) of the United Kingdom (UK) with an initial amount of €120 million of funding to projects to support developing countries and emerging economies that show leadership on tackling climate change and that want to implement ambitious climate protection measures (NAMAs). In 2015 the Danish Ministry of Climate, Energy and Building (MCEB) and the European Commission joined the NAMA Facility as new Donors. The third call for projects in 2015 provides funding up to EUR 85 million. The NAMA Facility provides tailor-made support for the implementation of highly ambitious and transformational NAMAs in developing countries. The Facility conducts competitive calls and selects the most ambitious and promising NAMA Support Projects for funding. Up to today, only two projects have been submitted in the forestry sector (Tajikistan and Burkina Faso).

INDCs

In preparation of COP-21 in December 2015, countries are formulating their „***Intended Nationally Determined Contributions***" (INDCs) towards achieving the objective of the Convention in a post-2020 climate regime. INDCs can be seen as pledges for mitigation targets that might include a variety of activities, including Market Mechanisms, REDD+ and NAMAs programs. As of September 2015, 60 out of the 196 parties to the UNFCCC have communicated their INDCs, covering 65% of the global GHG emissions.

Up to end of September 2015, six ITTO producer countries have formulated INDCs, with GHG reduction targets between 15% and 50% relative to a business as usual scenario by 2030. Most countries mention forestry a key sector for achieving the targets; they also specify specific forest-related activities comprised in these targets (see Annex A).

Amazon Fund

The Amazon Fund was established in 2008 in order to combat deforestation and promote the preservation and sustainable use of forests in the Amazon Biome. According to the annual report 2014, the fund contributes to the continued decrease in deforestation in the Brazilian Amazon, leading to emission reductions of about 0.5 billion tCO_2 per year, when comparing with historical levels of deforestation. For fundraising, a value of US$ 5 per tCO_2 is used.

As of December 2014, US$ 1,034 million have been pledged to the fund by Norway, Germany and Petrobas. US$ 901 million (87%) have been deposited. The fund, managed by the Brazilian Development Bank (BNDES), approved financial contributions of US$ 505 million for 69 projects. US$ 184 million have been disbursed, 43% thereof in 2014 (+ 108%). Projects are mainly located in Brazil; one project is supporting forest monitoring in the region using INPE technology.

Congo Basin Forest Fund

The Congo Basin Forest Fund (CBFF) is a multi-donor fund set up in June 2008 to take early action to protect the forests in the countries forming the Congo Basin. It aims to support transformative and innovative projects to be complemented to existing efforts which will develop the capacity of people and institutions of the Congo Basin to enable them to manage and conserve their forests. It encourages governments, communities, NGOs and the private sector to work together to share their specific experience.http://www.climatefundsupdate.org/listing/congo-basin-forest-fund.

Governors' Climate & Forest Task Force

The Governor's Climate & Forest Task Force (GCF) is an alliance of 29 states and provinces[20] that started 2011 is now covering more than 25% of world tropical forests and leading the way in building comprehensive, jurisdiction-wide approaches to reduce deforestation. In 2015, three new states joined the GCF: Rondônia (Brazil), Cavally and Bélier (Ivory Coast).

In 2014, 14 governors signed the Rio Branco Declaration and committed themselves to a 80% reduction of deforestation by 2020. The declaration was re-affirmed in 2015 by the additional signatures of Mato Grosso, Para and Tocantins.

The GCF Fund was initially supported by the United States Department of State with a US$ 1.5 seed grant in 2011. In a first request for proposals the GCF Fund awarded US$ 840'000 to 7 projects for to improving forest carbon assessment and capacity building. A second request for proposals closed in January 2015. In June 2015, Norway announced a contribution of US$ 25 million to the GCF Fund.

Zero-deforestation supply chains

In September 2014, about 30 of the world's biggest companies and more than 50 influential civil society and indigenous organizations, signed the New York declaration on forests. The signatories aim to halve the rate of global natural forest loss by 2020 and to end natural forest loss by 2030. In particular, the initiative aims to support the private sector to eliminate deforestation from supply chains of palm oil, soy, paper and beef products by 2020. An unprecedented number of such commitments have been made in 2014.

UN Sustainable Development Goals

A total of 17 Sustainable Developments Goals (SDG) were endorsed by the UN General Assembly in September 2015. While in several goals there is a direct or indirect relationship to forest and forest use, Goal 15 explicitly refers to forests: *"Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss".* It includes *inter alia* the following targets:

- 15.1: By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements
- 15.2: By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally
- 15.5: Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species
- 15.9: By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts
    - Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation

[20] Brazil (7), Indonesia (6), Ivory Coast (2), Mexico (5), Nigeria (1), Peru (5), Spain (1) and USA (2)

5 Prospects on REDD+ Financing

Gross forest loss makes up some 20% of global emissions today. The goals of the New York Declaration on Forests (September 2014) – to halve forest loss by 2020 and end it by 2030, and to restore 350 million hectares by 2030 – could translate into 4.5-8.8 billion tCO_2 emission reductions per year by 2030. Costs of about $5/tCO2 would result in financing needs of $22-44 billion per annum, which seems consistent with the estimates of the Eliasch Review of $11-19 billion per year for halving deforestation. Aggregated REDD+ pledges in the 2006-2014 period were about $8.7 billion (see Figure 1 and Table 1), the majority of them made in the period 2006-2010, in the run-up for Copenhagen.

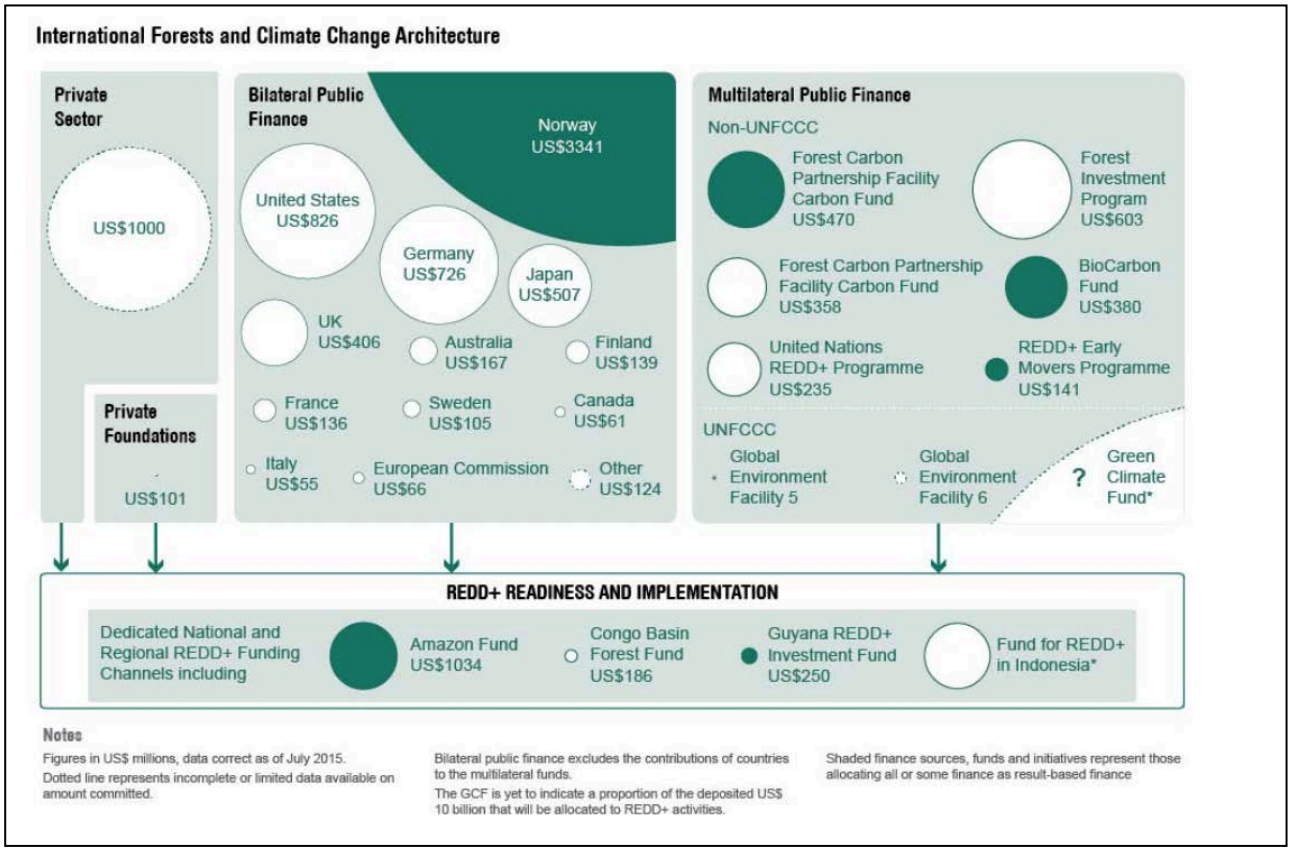

Figure 1: Architecture of Funds for Forests and Climate Change as of July 2015. (Source: ODI, 2015)

Current potential supply is estimated around 450 $MtCO_2$ per year, about 400 $MtCO_2$ thereof from programs developed in Brazil. Current demand however is well below 100 $MtCO_2$ per year. It is estimated that this imbalance between supply and demand will continue, at least for the period 2015–2020, with potential supply exceeding demand by 4 to 10 times. It is only after 2020 that demand is expected to originate from a compliance market established as part of a global climate change agreement under the UNFCCC. In order not to lose current momentum, additional interim finance of about $1.5 billion per year should be made available for REDD+ in the period 2015-2020.

Beside the already operational financial arrangements for forests and climate change described above, some new initiatives have been launched over the last year.

In September 2014, Germany, Norway, and the UK released a joint statement indicating they “stand ready to scale up results-based finance for large-scale, REDD+ emission reduction programs, if countries put forward

robust proposals. This includes funding for up to 20 new, credible programs proposed by 2016 through a range of funding mechanisms."[21]

At the Lima climate talks in December 2014, 14 tropical forest countries[22] issued the "Lima Challenge," pledging to "do their fair share" to reduce emissions on their own, but also to quantify before the Paris climate talks later this year how much more they can achieve through international mitigation partnerships.

On 29 September 2015, a new Central African Forest Initiative (CAFI) was launched on the margins of the UN Sustainable Development Summit in New York. The initiative is a partnership of 6 Central African countries, donors and international organisations[23] and will develop investment frameworks to support the sustainable use and conservation of forest resources (REDD+ Phase II). Norway has pledged US$ 42 million annually through 2020. The support will be coordinated through the Multi-Partner Trust Fund Office of the UNDP.

Green Climate Fund (GCF)

The GCF, headquartered in Incheon, South Korea since 2013, was formally established in COP-16 in Cancun in 2010. It works within the framework of the UNFCCC with the overall objective to assist developing countries in adaptation and mitigation practices to counter climate change. It is governed by a Board of 24 members and supported by a Secretariat. While REDD+ and other land-use based adaptation and mitigation programmes are in line with the GCF's goals and purposes, the guidelines and frameworks on how the GCF will finance REDD+/SFM projects has yet not been fully developed.

On the 21st May 2015 the Fund reached its threshold with signed contributions equaling 50% of its total pledges. It is now authorized to allocate resources for project implementation. As of July 2015, a total of US$10.2 billion have been pledged by 35 governments. Thereof US$5.8 billion (57%) have been signed. 50% of the GCF resources are allocated for adaptation, 50% for mitigation programs. Forests and land-use is one of the fund's priority areas, at the same level with energy, transport, buildings / industry.

The 10th meeting of the Board of the Green Climate Fund (GCF) in July 2015 decided on policies and procedures that will enable a review of the Fund's first project proposals at the GCF Board's 11th meeting in November 2015 in Zambia, with an eye on making financing decisions ahead of the 21st session of the Conference of the Parties (COP-21) to the UN Framework Convention on Climate Change (UNFCCC). The Board also accredited 13 new partner institutions, and launched a US$200 million pilot programme for enhancing direct access to the GCF.

The GCF aims to finalize its first set of projects for approval by the GCF Board at its 11th meeting in November 2015. An initial version of the Fund's project proposal form is available online for use by GCF national designated authorities and accredited entities that will channel GCF resources into projects.

[21] https://www.gov.uk/government/news/joint-statement-on-redd
[22] Colombia, Chile, Costa Rica, Democratic Republic of Congo, Dominican Republic, Ethiopia, Guatemala, Guyana, Liberia, Nepal, Panama, Paraguay, Peru and Philippines
[23] CAFI is a partnership of the 6 Central African countries - Cameroon, Central African Republic, Democratic Republic of Congo, Equatorial Guinea, Gabon and Republic of Congo, with support by the European Union, France, Germany, Norway, United Kingdom, UNDP, World Bank and FAO. Further, Brazil will support the initiative through capacity building support, knowledge sharing and expertise in policy implementation.

6 Conclusions

REDD+ is probably the most advanced element the post-2020 climate regime under the UNFCCC that should be agreed in COP-21 in Paris in December this year. The REDD+ policy framework, including guidelines and procedures are in place. At the same time, more and more countries start or considerably advance their Readiness preparations (Phase I); by the end of 2015 more than 60 tropical and subtropical countries are engaged in REDD+ Readiness. Readiness is supported through various multilateral and bilateral programs and arrangements. The number of funds and countries however that start engaging in transformational investments (Phase II) still remain limited however. Besides considerable efforts in the voluntary CDM type market in the past, Phase III pilots, i.e. the demand for carbon credits from established schemes for result-based payments are still in its infancy. In major efforts in this respect is done by the Carbon Fund of FCPF.

One might conclude that the slow development in implementing REDD+ phases 2 and 3 that the international community is not yet fully convinced that REDD+ will become a reality from 2020 onwards, providing predictable and adequate funding for halving or even stopping net tropical deforestation by 2030. There are some signs that the process is moving in this direction, although considerably slower than it was initially expected. While countries, both developing and developed countries, are repeatedly re-affirming their intentions to stop tropical deforestation, financing of REDD+ is not yet at the scale that would be required for triggering the transformational changes required in the years to come.

ITTO producer member countries (and developing countries overall) that are interested in participating in a future REDD+ scheme would be well consulted not to wait for intermediate REDD+ finance, but to pro-actively push forward the required reforms and to develop REDD+ programs in anticipation of result-based payments at scale. Developed countries on the other side should increasingly support developing countries in conducting technical and institutional reforms in order that subsequent result-based payments become sustainable.

REDD+, as it is designed now, will not be a long-term financing instrument for tropical forest. Once a country has been rewarded for not releasing a certain amount of carbon, it is assumed that this carbon remains stored there over a long period of time, also without continuous payment. However, REDD+ has the potential to assist countries to switch to an alternative development path of a “green economy”, using the countries natural resource in a sustainable and economically efficient way, e.g. through sustainable forest management (SFM).

REDD+, as an established financial mechanism represents an important and rapidly developing component of the SFM finance equation in tropical countries. Thus, SFM should not be seen as one of the activities to achieve REDD+. SFM it the goal, and carbon financing, including REDD+, Forest NAMA and other approaches as one of the mechanism that should enable the sustainable management of tropical forests in the long run.

ANNEX A Engagement of ITTO Producer Member Countries in major Forest/Climate Change Initiatives (Focus: Mitigation)

	FCPF Readiness Fund	UN-REDD*	FIP**	FCPF Carbon Fund	Payment for performance initiatives	Forest in National NAMAs	Specific Forestry NAMAs	INDCs (10.9.2015)
Africa								
Benin	—	TS	—	—		SFM and plantation development	—	100'000 ha planted forest; restoration of degraded forests; 1.3 M ha production forests; efficiency of charcoal prod, & cooking stoves;
Cameroon	Preparation grant signed (2013)	TS	(N)	—		REDD; CDM projects; reforestation	—	—
Central African Republic	R-PP submitted (2013)	☐	—	—		Increase of forest cover from 11% in 2005 to 25% in 2050; SFM and certification; REDD	—	—
Congo	Mid-term progress report (2015)	TS, NP	N	ER-PIN (2014)		Improved stoves; REDD; Forestry development; Plantations	—	—
Côte d'Ivoire	Preparation grant signed (2014)	TS, NP	N	—		Improved carbonization; Efficent stoves; SFM	—	—
DRC	R-Package submitted (2015)	TS, NP	P	ER-PIN (2013)		—	—	Reforestation of 3 million ha of forests
Gabon	—	☐	—	—		SFM (from 2 m-> 12 million certified in 2020); Plantation/restoration of 10 million ha; Community forests 2 million ha	—	Increase of rotation period (15->25y); Creation of national parks; Adoption of a national land-use plan

Ghana	Mid-term progress report (2014)	TS	P	ER-PIN (2014)		SFM; REDD; FLEGT; land-use plans; Rehabilitate degraded forest land; Community and commercial plantations	—	—
Liberia	Mid-term progress report (2014)	TS	—	—		—	—	—
Mali		—	—	—		—	(2) Forestry NAMA	—
Mozambique	Preparation grant signed (2013)	—	N	—		—	—	—
Togo	Preparation grant signed (2015)	TS	—	—		Increase of forest area from 7% to 30% in 2050	—	—

Asia & Pacific								
Cambodia	Preparation grant signed (2013)	TS, NP	(N)	—		REDD	(1)	—
Fiji	Preparation grant signed (2015)	TS	—	—		—	—	—
India	—	—	—	—		no reference to forest	—	—
Indonesia	Mid-term progress report (2013)	TS, NP	P	ER-PIN (2014)	Norway Indonesia Partnership	Reduction of deforestation and forest degradation	(10) Community Forest Partnership for Wood Biomass Based Energy -	—

							CFFBE NAMA	
Malaysia	—	☐	—	—		—	—	—
Myanmar	—	TS, NP	—	—		—	—	—
Papua New Guinea	R-PP submitted (2013)	TS, NP	—			no specific actions mentioned	—	—
Philippines	—	TS, NP	—	—		—	(2)	—
Thailand	Preparation grant signed (2015)	—	—	—		no reference to forest	(2)	—
Vietnam	Mid-term progress report (2015)	TS, NP	—	ER-PIN (2014)		—	(3)	—

Latin America								
Brazil	—	—	P	—	Amazon Fund; REDD+ Early Movers	Reduction of deforestation in Amazon and cerrado	—	—
Colombia	Preparation grant signed (2015)	TS, NP	—	—	(REDD+ Early Movers)	Zero-deforestation in the Amazon by 2020; REDD; Commercial reforestation	(6)	National target (-20% to BAU), incl. AFOLU
Costa Rica	Mid-term progress report (2014)	TS	—	ER-PIN (2013)		Measures in forestry	(4) Low carbon coffee	—
Ecuador	—	TS, NP	N	—	(REDD+ Early Movers)	—	(2)	—
Guatemala	Preparation grant signed (2014)	TS	N	ER-PIN (2014)		—	—	—
Guyana	Preparation grant signed (2014)	☐	(N)	—	Guyana REDD+ Investment Fund	—	—	—
Honduras	Preparation grant signed (2014)	TS, NP	(N)	—		—	(1)	—
Mexico	Mid-term progress	TS	P	ER-PIN (2014)		no specific actions	(21)	0% deforestation until 2030;

	report (2015)					mentioned		Watershed reforestation
Panama	Preparation grant signed (2015)	TS, NP	—	—		—	—	—
Peru	Preparation grant signed (2014)	TS, NP	P	ER-PIN (2014)		Zero net-deforestation of natural forest; Conservation of 285'000 square miles of primary forest	(5)	—
Suriname	Preparation grant signed (2014)	TS	—	—		—	—	—
Trinidad and Tobago	—	—	—	—		—	—	No AFOLU targets

* Acronyms UN-REDD: : Partner Country — TS: Targeted Support — NP: National Programme

** Acronyms FIP: P: Pilot countries — N: Newly selected pilot countries — (N): Countries pre-selected for the preparation of an investment plan

*** NAMAs: Number in brackets shows the overall number of formulated NAMAs. NAMAs with a link to forestry are written out

Main reference links

FCPF Readiness Fund https://www.forestcarbonpartnership.org/sites/fcp/files/2015/May/FCPF%20Readiness%20Progress__051515.pdf

UN-REDD http://www.unredd.net/index.php?option=com_unregions&view=overview&Itemid=495

Forest Investment Program FIP https://www.forestcarbonpartnership.org/sites/fcp/files/2015/May/FCPF%20Readiness%20Progress__051515.pdf

Carbon Fund https://www.forestcarbonpartnership.org/sites/fcp/files/2015/May/FCPF%20Readiness%20Progress__051515.pdf

Payment for performance initiatives (not complete)

Forest in National NAMAs http://unfccc.int/resource/docs/2013/sbi/eng/inf12r03.pdf

Specific Forestry NAMAs http://www4.unfccc.int/sites/nama/SitePages/Home.aspx http://www.nama-database.org

INDCs (10.9.205) http://www4.unfccc.int/submissions/INDC/Submission%20Pages/submissions.aspx

ANNEX B: Climate change and tropical forests – A summary of the state of knowledge

The text beneath is a revised version of the technical summary provided to ITTC 50. It's mainly based on the reports of the working groups of AR5 (IPCC 2013 and 2014a), completed by an analysis of the consequences of the predicted change on humid tropical forests and their management.

The average global surface temperature has increased by 0.8 °C in the period between 1880 and 2012. Each of the last three decades has been successively warmer than any preceding decade since 1880 and the period 1983 – 2012 probably was the warmest 30-year period of the last 1,400 years. The year 2014 was the warmest since 1880. The 10 warmest years in the instrumental record, with the exception of 1998, have now occurred since 2000. Already now, in September 2015, it is close to sure that 2015 will again break the records

The observed warming is not homogenous. It has been about 1.5 times stronger over land surfaces than over the sea and about 2 times stronger in the arctic regions than in the global average. Changes in global precipitation patterns are more difficult to determine based on the available data. However, with middle confidence, an increase of dry periods and an increase of the number and intensity of heavy rainfalls has been observed over the same period.

The observed climate change can be explained by changes in the radiative forcing observed in different elements of the climate system, such as changes in the concentration of greenhouse gases (GHG) in the atmosphere, aerosols, clouds, albedo and solar radiance, which in total has increased by 2.29 Wm^{-2} since 1750. The radiative forcing of 3 Wm^{-2} due to increased GHG concentrations is partly compensated by the "cooling effects" of increased aerosol concentration (-0.9 Wm^{-2}) and the changes in albedo due to deforestation (-0.15 Wm^{-2}). The increase of solar radiance in the same period plays a minor role with 0.05 Wm^{-2}.

The 40% increase of CO_2 in the atmosphere from 278 ppm in 1750 to 391 ppm in 2011[24] (2015: 401 ppm) is with a radiative forcing of 1.7 Wm^{-2} the main driver of the observed climate change. About one third of the anthropogenic CO_2 emissions that caused this increase in atmospheric CO_2 came from land-use change. Today, about 10% of the annual CO_2 emissions are net-emissions from land-use change, mainly from tropical deforestation (i.e. including forest expansion, secondary regrowth, etc.). While CO_2 emissions from deforestation have been reduced over the past decade, emissions from combustion of fossil fuels are further increasing at unprecedented rates (see figure 1).

More than half of the historic CO_2 emissions did not remain in the atmosphere, but were reabsorbed by the oceans (28%) and by terrestrial ecosystems (mainly forests) not affected by land-use change (29%). The existence of those carbon sinks is a direct effect of the elevated concentrations of CO_2 in the atmosphere. It is assumed that the enhanced CO_2 concentrations, together with a longer growing seasons (particularly mid-to-high latitudes) and increased deposition of nitrogen has caused an increased net productivity of terrestrial ecosystems. This sink has been increasing over the last decades from 1.5 GtC per year in the 1980s to 2.6 GtC per year in the 2000s, which is more than compensating net-emissions of about 1 GtC per year resulting from land-use change.

Research in the last years has shown that the terrestrial carbon sink is mainly provided by established forests (e.g. article by Luyssaert et al, 2008 in Nature, stating that primary boreal and temperate forests in the northern hemisphere alone sequester 1.3 GtC per year). While boreal and temperate forests are net carbon sinks (0.9 GtC and 0.5 GtC per year), tropical forests were found to be near neutral with net emissions from land use change being compensated by sinks in established tropical forests.

[24] Monthly average of CO2 concentration for July 2015 of Mauna Loa Observatory: 401 ppm

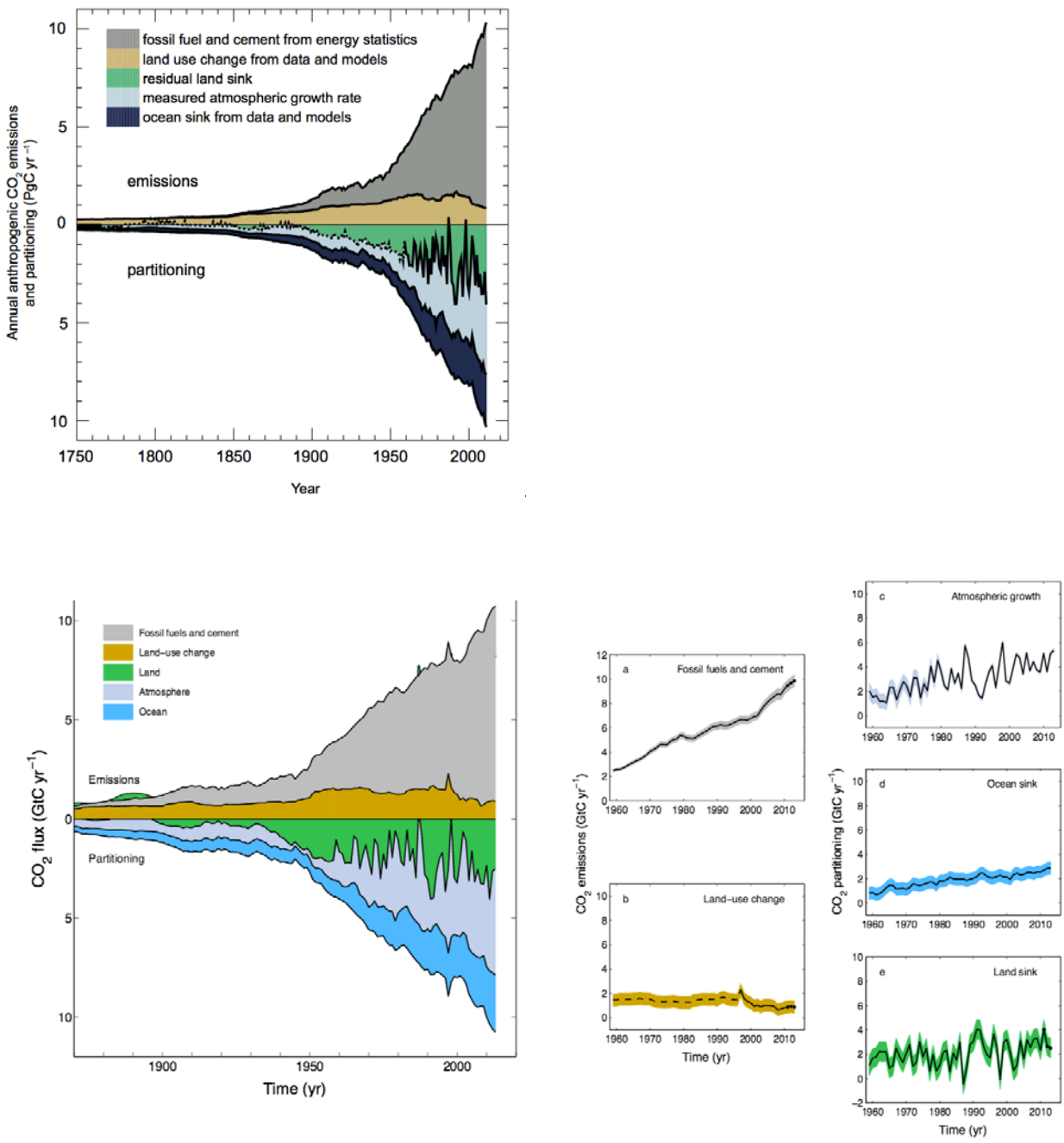

Figure 1: Left: Annual anthropogenic CO_2 emissions between 1870–2013 and their partitioning among the carbon sinks atmosphere, land and ocean (GtC/yr). Right: Components of the global carbon budget and their uncertainties between 1969–2013 (Global Carbon Project, 2014). The peak of land-use change emissions in 1997 was due to unprecedented peat and forest fires in Indonesia.

The future projection of climate change by the IPCC is based on projections of a multitude of climate models using different assumptions on the future radiative forcing of the different components of the climate system. In total, four types of scenarios (representative concentration pathways RCPs) are distinguished, with the most optimistic assumptions peaking at a radiative forcing at 3 Wm^{-2} in the coming years and a subsequent reduction to about 2.6 Wm^{-2} by 2100 (RCP2.6), two scenarios stabilizing at 4.5 Wm^{-2} and 6.0 Wm^{-2} by 2100 (RCP4.5 and RCP6.0) and one with business as usual greenhouse gas emissions being at 8.5 Wm^{-2} by 2100 and still far from stabilization (RCP8.5). The ranges of associated increases of global average surface temperature 2100 are between 0.3 °C – 4.8 °C, relative to the period 1986 – 2005. It is likely, for all scenarios but RCP2.6 that by 2100 temperature will increase by more than 1.5 °C above pre-industrial levels (1850 – 1900). Temperature increase by more than 2 °C until 2100 is likely for scenarios RCP6.0 and RCP8.5 and unlikely for RCP2.6. Warming by more than 4 °C is unlikely for all scenarios but RCP8.5.

It's almost certain that global warming will cause an increase in global precipitation by 1 – 3% per °C. The distribution of this increase will not be uniform and there will be increases in some regions and decreases in others. In general, the contrast between dry and wet regions and also the contrast between dry and wet seasons will further increase. The intensity and frequency of heavy rainfalls in the tropics will increase.

Impacts of climate change on forests

The interactions of forests with the climate system are manifold. The temperature, solar radiation, the precipitation and the CO_2 concentration in the atmosphere are principal factors of forest productivity. On the other side, forests influence the climate through the CO_2 they absorb from the atmosphere, the absorbance or reflection of solar radiance (albedo) and the cooling effect due to transpiration and the production of aerosols required for the formation of clouds.

Impacts of global change can be positive as well as negative. Increased CO_2 concentrations in the atmosphere, together with a longer growing season and increased deposition of nitrogen stimulates plant growth and is responsible for the 5% increase of net primary productivity observed between 2000 and 2009 relative to pre-industrial levels. On the other side, climate change will cause disturbances of forest ecosystems that might exceed those positive effects already in the 21st century. An increase of such disturbances of forest ecosystems (such as droughts, storms, forest and wild fires and pests) has already been observed in different regions of the world. Climate induced disturbances will probably become the main stress factor for terrestrial ecosystems in the second half of the 21st century. Until then, human induced stressors such as land-use change will remain the dominant factors.

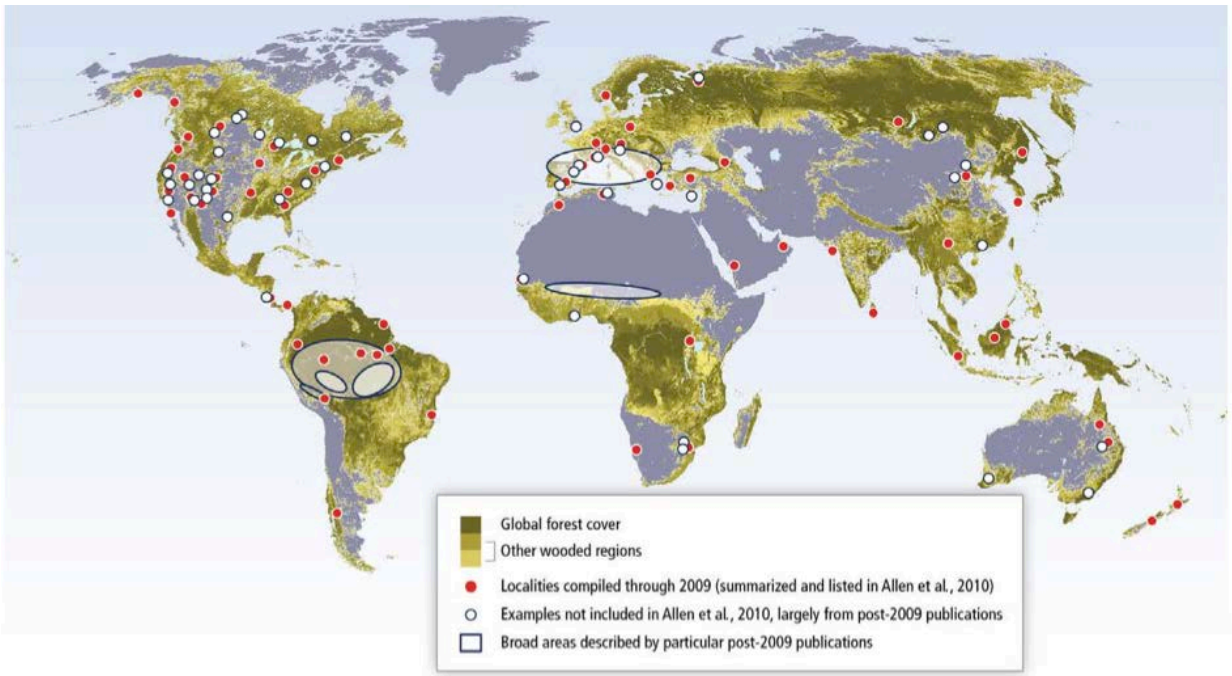

Figure 2: Locations of substantial drought and heat-induced tree mortality around the globe since 1970 (IPCC, 2014a)

According to the theory of ecological systems and experiments, an ecosystem can absorb disturbances up to a certain degree and collapses when this limit is exceeded. Climate change will thus not have a linear effect on forest ecosystems but will cause abrupt changes in their structure, composition and functioning when a certain limit of disturbance is exceeded. This non-linearity makes prediction of the impact of climate change on forest ecosystems extremly difficult or even impossible. A recent global study has shown that already 70% of the observed tree species operate close to their limits of water stress tolerance, indicating that vulnerability to drought and temperature stress will not be limited to arid and semi-arid forests but will also affect humid tropical forests which is the resource base of tropical timber. The impact of climate change is generally expected to be more severe in hot dry regions where trees are at their adaptive limits, and in confined areas of moist forest surrounded by drier land. In tropical regions, changes in rainfall regimes may be the most important climatic factors influencing tree distribution.

Besides the climate related incidences such as droughts, storms, fires and pests, that will become more common and might kill large numbers of trees, climate change will gradually shift the climatic envelope of forests, making them susceptible to pest and diseases and inhibiting their capacity to regenerate. Whether or not the migration of species can keep track with the climatic shift depends on the one side on the pace of climate change and on the other side on the capacity of a species to disperse itself over larger areas and also the availability of migration pathways. Natural migration rates of most species will not be sufficient to keep pace with the predicted rate of climate change, except in the case of some invasive species that can respond rapidly because their seeds are dispersed over very long distances or because they reach maturity very quickly. Particularly late-successional trees (that are often also main commercial timber species in tropical humid forests) belong to the slowest moving species with some tenths to hundredths meter per year. Some of them might, without human intervention, not be able to follow even moderate climate shifts. In any case, retreat at the receding edge of species' distributions is likely to be more rapid than advance into new areas.

To what extent current forest ecosystems, and in particular tropical forests, will be able to resist to climate change also depends on its adaptive capacity. Genetic diversity within individual species increases the likelihood that the species will be able to survive in a range of different environments. Within- and between-species diversity among trees can also contribute to ecosystem stability more broadly. Ecosystems that have persisted for a long time probably have a high capacity for autonomous adaptation, at least up to the level of environmental variability they experienced in the past. Research has shown that the genetic variability of late-successional trees would in general allow them to adapt to climate change and mitigate adverse impacts. However, the same studies also indicate that adaptive responses will lag far behind even modest rates of projected climate change, due to the very long generation time of trees. Trees with high phenotypic plasticity are under less pressure to adapt genetically. At least in the short term, plasticity is likely to be more important than genetic adaptation in ensuring that tree populations are able to survive the effects of climate change.

Climate change mitigation potentials in forestry

The land-use sectors are the only sectors in which emissions are decreasing (mainly due to the reduction of deforestation in the Brazilian Amazone) and are projected to further decrease. Emissions from deforestation have decreased from about 5.5 $GtCO_2$/year[25] in the period 1960 – 2000 to about 4 $GtCO_2$/yr in the period 2000 – 2012. Current emissions from tropical deforestation are about 3.3 $GtCO_2$/yr. Emissions from tropical forest degradation are estimated to be in the same range. About 4.1 $GtCO_2$/yr is reabsorbed through regrowth of secondary forests, 1.7 $GtCO_2$/yr through continued sequestration of primary tropical forests and about 0.9 $GtCO_2$/yr through established plantations.

Besides further reducing emissions from deforestation and forest degradation, a key issue for climate mitigation in forestry, particularly on long-term, is the enhancement of sinks and maintaining their permanence. Due to the ability of removing CO2 from the atmosphere (increase of forest biomass and/or wood-energy combined with carbon capture and storage), forest mitigation options play a key role in all scenarios leading to a stabilization of GHG concentrations by 2100. On the other side, carbon stored in the terrestrial biosphere is susceptible to loss to the atmosphere as a result of climate change and with medium confidence, increased mortality and dieback will occur in many places in the next one to three decades. Examples of climate-induced abrupt changes of terrestrial ecosystems, which could lead to substantial impact on climate within the 21st century, are the boreal-tundra Arctic system (medium confidence) and the Amazon forest (low confidence).

The potential of climate change mitigation in forestry is estimated 0.01 – 1.45 $GtCO_2$/yr at prices of up to 20 USD/tCO_2, 0.11 – 9.5 $GtCO_2$/yr at prices of up to 50 USD/tCO2 and 0.2 – 13.8 $GtCO_2$/yr at prices of up to 100 USD/tCO_2. Looking at the overall mitigation potential in land-use sectors, demand-side measures, such as changes in diet and reductions of losses in the food supply chain have about the same potential as supply-side measures (medium evidence, medium agreement). Proposed instruments to realize the mitigation potentials in forestry are regulatory approaches such as national REDD+ policies, forest law to reduce deforestation, land-use planning and governance; credit lines for low carbon agriculture and sustainable forestry; certification schemes, protection of forest and diffusion of information and innovative technologies.

[25] For the discussion of the climate change mitigation potential, figures are presented in gigatons CO_2. One $GtCO_2$ corresponds to 12/44 GtC

Consequences for forest management

Projections of climate change and its impacts on forest ecosystems are insecure and far from perfect. However, immediate and pro-active measures should be taken in the forest sector knowing that both, capacity for migration and autonomous adaptation of forest key species such as late-successional trees are highly limited. How to deal with this situation? A key element of an adaptation strategy has to be the recognition of the uncertainties. It will lead to measures that promote the resistance and the preadaptation of forests to a variety of future conditions (e.g. FAO, 2013).

The literature distinguishes two options for improving the resilience of forest ecosystems towards negative impacts of climate change through forest management. One is to specifically reduce the negative impacts of climate change by phytosanitary measures, protection of habitats and reduction of non-climatic stressors, in order to maintain the elastic capacity of a forest ecosystem[26]. The other option is to include additional measures in the management scheme that increase the adaptive capacity of the forest ecosystem, in order that it can maintain its principal structure and functioning under different future conditions. It includes activities such as maintaining and strengthening of species diversity, ensuring habitat connectivity, or even the assisted migration or the physical dislocation of species. Particularly the targeted restoration and promotion of structures resilient to disturbance events will increase the adaptive capacity of the system.

The still high portion of unmanaged tropical forests, the high diversity of tropical tree species with ten of thousands of species, but fewer than 500 have having been studied in any depth), the limited knowledge about stand ecology and the lack of experience with mixed tropical timber plantations with valuable species remains a considerable challenge for assisted adaptation in tropical regions. According to the Global Plan of Action for the Conservation, Sustainable Use and Development of Forest Genetic Resources (FAO, 2014), “genetic diversity, including diversity among species, is the key to the resilience of forest ecosystems and the adaptation of forest species to climate change.” The inclusion of measures in forest management planning to increase resilience of forest stands and tree species is a major challenge for tropical timber production countries in the near future.

Identifying and utilizing species and populations with phenotypically plastic individuals may be an important element in climate change adaptation strategies, especially in regions where the climate is expected to become more variable. In the long run, however, relying on phenotypic plasticity could prove detrimental if environmental conditions change drastically and new, more adapted, phenotypes are needed. There is a need to identify trees species that are suitable, in both environmental and livelihood terms and to establish breeding programmes in order to improve their phenotypic plasticity, drought resistance and/or pest resistance, fire resistance/tolerance, cyclone resistance, salt tolerance, etc.

With regard to the management of forests carbon stocks, similar uncertainties prevail. If the CO2 sequestration through tropical climax forests continues to increase, the best strategy would be to preserve those important carbon sinks (assure the permanence of standing carbon stocks). If under different circumstances the forests carbon stocks become saturated or even start to decay, the best strategy would be to harvest the timber and use it to replace fossil fuels (substitution).

Non-regret management options are those that try to increase both, wood production and harvest as well as forest carbon stocks. This type of management can be best assured in tropical humid forests through a carefully applied polycyclic management system. Concretely, if not in conflict with other management objectives, these include the replacement of stands in decay or with low productivity either through natural regeneration or enrichment plantings; the reduction of damages during logging (reduced impact logging); the promotion of reforestation and afforestation through a species mix that enhances the resilience; and the enhancement of tree growth by optimized fertilization and use of nitrogen fixing species in fast growing fiber plantations.

* * *

[26] Elastic capacity of a forest ecosystem refers to the dynamic forest processes within a range of changing vertical forest structure, species composition and biodiversity, and productivity normally associated with the natural forest type expected at that site.