



Background report

Financing REDD+ through private forestry sector

How to attract REDD+ related private investments

Project title: Financing REDD+ through private forestry sector - How to attract REDD+ related private investments

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Executive summary

In the discussion surrounding REDD+, the private sector is often narrowly defined as buyers of emissions offsets through carbon markets. Here, we broaden the definition of the private sector to include investors in forests and forest product value chains. We argue these investments remain restricted in REDD+ relevant countries due to unclear forest tenure, reputational risks, perceived management complexity and lacking experiences. Encouraging private sector investment in sustainable management of natural and degraded forests can contribute to the long-term financing of REDD+.

The forestry sector and institutional investors (e.g. domestic and international pension and insurance funds) are not yet sufficiently engaged in REDD+ activities. FLEGT is an important precondition to attract private investments in the forestry sector by correcting market failures related to illegal timber production and marketing. However, many countries with potentially attractive business environments for forestry investments are not included in the EU's FLEGT Action Plan. Tools for assessing these countries and their forest sectors are suggested.

There is significant tropical timber demand, both at international and local levels, that has the potential to drive large private forestry investments with potential REDD+ benefits. This demand must be encouraged to require timber or wood products that have been responsible sources and processed, either through third party verifications or national programs such as FLEGT VPAs. We propose a preliminary 'ease of doing business in forestry index' that assesses and compares national forest sectors, their transparency and the competitiveness of responsible forestry practices across different countries. This can be adapted for small- or large-scale forestry activities.

REDD+ implementation requires cross-sectoral planning while at the same time providing incentives to maintain the forest. The creation of an investment climate that promotes sustainable forestry activities defines a sectoral REDD+ goal, which goes along with significant opportunities for capturing private sector investment. This strategy coincides with the objectives of the FLEGT Action Plan, which aims at strengthening the forestry sector in partner countries, making sustainable forestry more competitive with competing land uses such as agriculture and mining. REDD+ combined with FLEGT can provide the secure governance framework needed to foster investments in responsible forestry activities.

1 Introduction

The deforestation and degradation of tropical forests is driven by a variety of direct and indirect factors. Direct drivers are defined as all human activities that directly reduce forest cover, either completely resulting in deforestation or partially resulting in forest degradation. Such direct drivers include the expansion of agricultural land, infrastructure development and unsustainable wood extraction, either for timber or for charcoal production. Indirect drivers of deforestation and forest degradation are related to a complex and dynamic set of underlying factors. Any measures to deal with deforestation and degradation have to take the local context and these indirect factors into account to be successful in the long run. The most important indirect drivers of deforestation include economic, technological, cultural, demographic and institutional and political factors.

Reducing deforestation and forest degradation requires an effective and equitable combination of enabling policies, institutions and incentive mechanisms, including economic incentives, for sustainable management of forests. The REDD+ decision at COP 17 highlighted that financing will be result-based, stemming from a wide variety of public and private sources. The financing instruments available to REDD+ readiness and implementation will determine the scale at which the activities are able to occur. There are a number of international REDD+ financing options currently or potentially available including carbon markets, multilateral banks (such as the Forest Carbon Partnership Facility of the World Bank), bilateral agreements, philanthropic entities, and the private sector.

The sources of private finance remain speculative and are not yet well understood. In the current debate, the role of private finance is quite narrow with a focus on their potential role in emission trading. In this report, we take a broader perspective of the role of the private sector that is able to support long-term REDD+ financing. The private sector includes private forestry actors of various sizes and backgrounds operating in countries engaged in REDD+. The framework to engage the private forestry sector, including small and medium sized forest enterprises (SMFE) owned by local forest owners, will be assessed and recommendations provided. A typology of forest management types and corresponding forestry investment mechanisms, including a review of existing voluntary REDD+ projects, will be provided in order to understand the engagement of the private forestry sector as well as existing financing mechanisms. Subsequently, we review tropical timber trade, demand and forest-related value chains to understand if sustainably produced timber can trigger significant private sector REDD+ relevant investments. A review of the forestry and REDD+ related standards provide guidance for private and public co-investments. Finally, we will provide REDD+ private investment options and priorities.

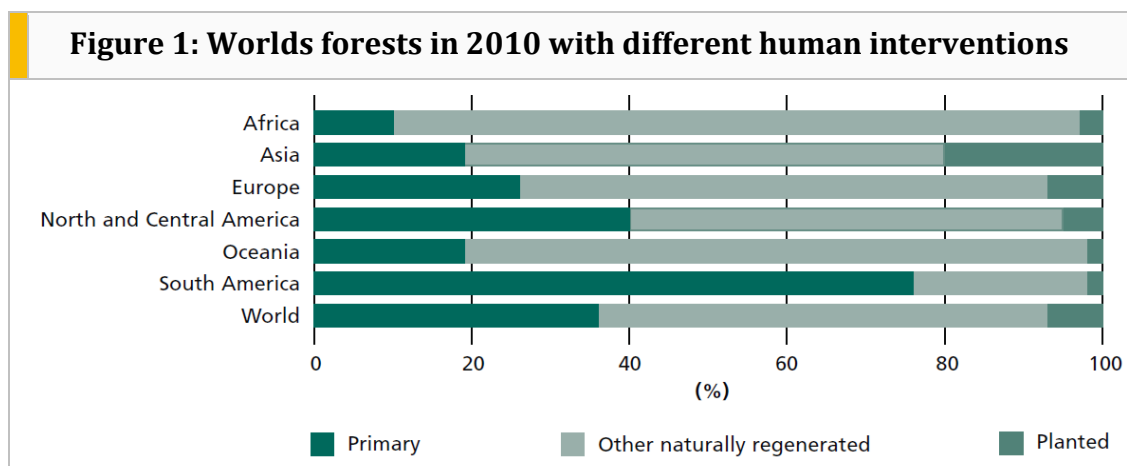
This chapter will only consider REDD+ activities that explicitly tackle deforestation and forest degradation drivers related to forest resources: mainly timber and wood extraction, including unsustainable commercial and small-scale logging, fuel-wood and charcoal use. However, considering the competition between forestry and other land uses, the review of forest management types and business models will also reflect how to increase the competitiveness of sus-

tainable management of forests compared to other land uses, especially forest conversion for agriculture.

2 Forest sector and REDD+

The total global forest area covers 4bn ha, of which 44% (1,750m ha) are in the tropics. About 57% of global forests are naturally regenerated and degraded¹ (see Figure 1). Thirty-six percent of the world's remaining forests are primary forests, i.e. natural forests with intact ecological processes and without visible degradation (FAO, 2010). Most of the primary forests are located in South America.

Forests span a continuum beginning with natural mostly untouched forests and selectively logged primary forests, to highly degraded forest areas where the remaining trees may or may not have the ability to regenerate. Depending on the national forest definition, such areas may no longer be defined as forests. Carbon stocks and biodiversity generally decline respectively along this continuum, but the relationships are not linear. Planted forests cover nearly 7%, or 264m ha, of global forests and an additional 5m ha are planted annually (FAO, 2010). Many of these forests have been established with public funds for protection purposes, i.e. China alone planted 70 million ha primarily for soil erosion control. Roughly 200m ha, or 75%, of forest plantations have been established with introduced tree species, mainly eucalyptus, pine, acacia and rubber.

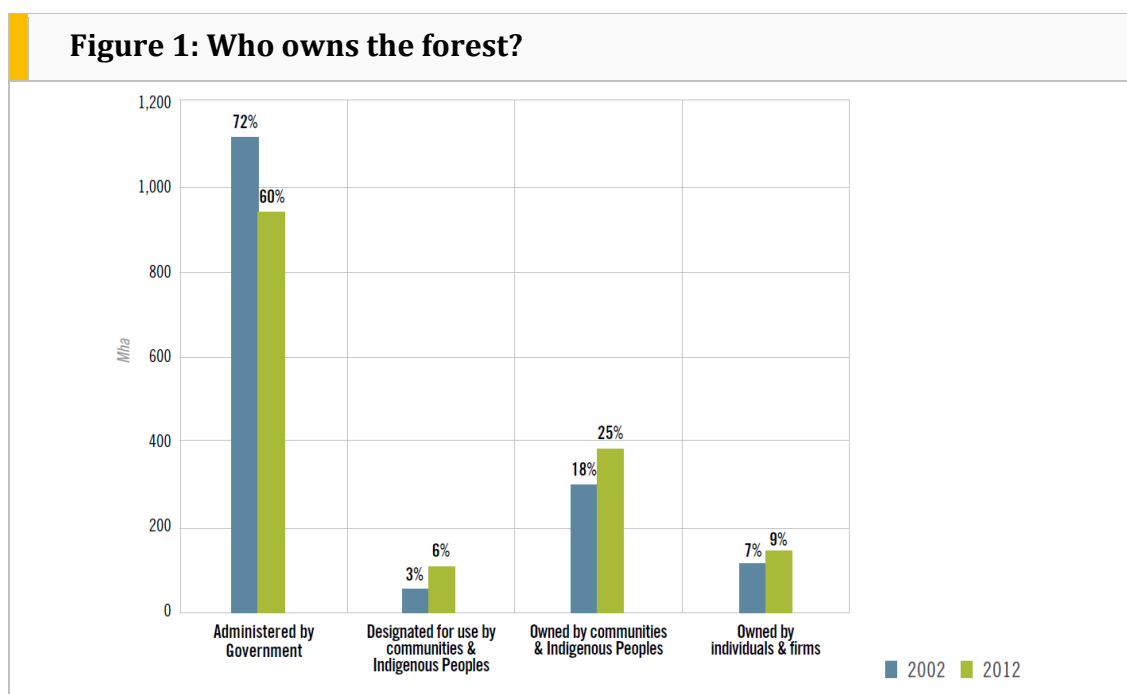


Source: FAO (2010)

¹ In this paper we define forest degradation as a reduction of the capacity of a forest to provide goods and services (FAO, 2011).

2.1 Forest with investable land tenure

Most of the world's forests are publically owned (as seen in Figure 2), with the state administering different bundles of rights² to forest users, whether public or private entities. As land grabbing increasingly threatens the livelihoods of poor rural population groups, the call to strengthen indigenous and community land tenure becomes louder. Despite the international attention given to the subject, tenure to forests in many developing countries remains unclear and subject to dispute (Sunderlin et al. 2009). Without secure rights, private entities, local resource owners and communities lack long-term financial incentives for maintaining their forest resources or investing in sustainable management of forests. Clear and enforceable land tenure is a precondition for investments in responsible forestry. In order to ensure against forest conversion, however, secure land tenure must be accompanied by other incentive structures, i.e. those offered through REDD+.



Source: Rights and Resources Initiative (2012). The countries considered include 80% of the forest area in developing countries. Changes between 2002 and 2012 are mainly related to China.

Although trends are changing, governments own about 80% of forest land (Collaborative Partnership on Forests, 2012) and customary forest ownership by indigenous and other forest-dependent local communities is often not recognized by statutory law. However, the difference between official ownership and effective authority over forests is large in many countries, a phenomenon which is not captured in Figure 2 above.

² Otherwise known as property rights, these include access, withdrawal or use, management, exclusion and alienation rights to forests, including for how long and under what conditions. Forest tenure includes these rights, whether in customary or statutory terms.

Moreover, in tropical forest countries most relevant for REDD+, forests are often subject to multiple and overlapping claims, e.g. by mining and agro industrial interests. In order to foster private sector investment in REDD+ through sustainable management of forests, land tenure must first be clarified. Given such land tenure clarifications are time consuming and sensitive processes, we suggest developing alternative tools that assess the business climate for forestry enterprises looking to invest in forests or forestry in REDD+ relevant countries. If successful in achieving its stated objectives, the EU's Forest Law Enforcement Governance and Trade (FLEGT)³ Action Plan provides the groundwork for achieving the good governance requirements for long-term private sector investments in sustainable forestry, but many countries suitable for such investments are not included in the FLEGT programme.

2.2 Forest carbon: global distribution

Forests store nearly 50% of all terrestrial carbon or 4,202 Gt CO₂ according to IPCC (2007). Gross deforestation in tropical regions contributes 3 Gt CO₂ per year and an additional 2.3 Gt CO₂ per year related to soil carbon losses, peat land emissions and forest degradation (Baccini et al. 2012, Harris et al. 2012). The uncertainty of these numbers is high, i.e. ± 1.1 Gt CO₂ per year (Harris et al, 2012). With regards to the regional distribution, about 50% of annual forest and carbon loss is located in South America, mainly in Brazilian Amazon. The forest area loss in Sub-Saharan Africa, South and Southeast Asia is roughly a quarter of the total forest loss, but in Sub-Saharan Africa due to the lower carbon density, deforestation related emissions are much lower compared to Asia.⁴ In order to compare with emissions reductions targets, the European Commission has a target to reduce emissions from tropical deforestation by 50% by 2020. Accordingly, if only deforestation or also forest degradation emissions are targeted, between 1.5 and 2.6 Gt CO₂ per year need to be cut.

Most forest emissions are in South America, particularly in Brazil. Brazil also has a high proportion of privately managed forests and relatively good governance systems in place to implement REDD+. Accordingly, this may indicate that private sector investments in REDD+ are probably most attractive in Brazil. However, picking the low hanging fruits may ignore distributional goals related to REDD+ implementation support. In the following section we analyze the forestry related deforestation and forest degradation drivers in order to better understand the options for private forestry related investments in REDD+.

2.3 Addressing forestry related deforestation and forest degradation drivers

There is limited quantitative and reliable information available with regards to the specific deforestation and forest degradation drivers, their underlying causes, related opportunity costs and mitigation strategies for REDD+. Moreover, developing countries implementing REDD+

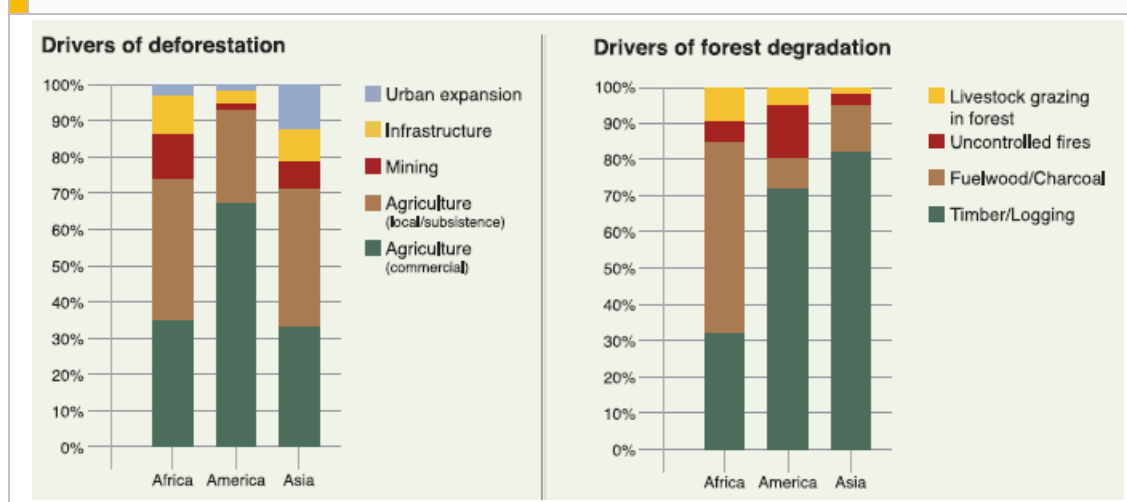
³ In this report we refer to FLEGT more broadly considering all international and national activities related to forest law enforcement governance and trade, not just to the EU FLEGT related activities.

⁴ http://www.forestemissions.org/~media/Files/Projects/Carbon%20Emissions/CarbonEmissions_Policy%20Brief.ashx

strategies do not officially report their knowledge on drivers in a standardized format. Drivers are location-specific and the policies and measures addressing them must equally be location-specific. In this report we seek to describe general models and investment strategies that address drivers but recognize that concrete intervention is highly dependent on national and local circumstances (legal frameworks, land tenure arrangements, opportunity costs of land uses, etc.).

Forestry activities, i.e. timber extraction and logging, are the main drivers of forest degradation (see Figure 3). There is a strong link between degradation and deforestation because unsustainable forest use increases the opportunity costs of forestry, i.e. the difference in revenue between forest use for timber production and the highest alternative land use, which is often forest conversion for agriculture. Degradation patterns are regionally distinct: in Latin America and Asia, logging is the main driver while fuel-wood and charcoal extraction drives forest degradation in Africa.

Figure 3: Drivers of deforestation and forest degradation



Source: Prince Charities (2012) based on Hosonuma et al (2012)

A number of governments and market-related initiatives have been put in place in order to tackle these degradation drivers, including a number of programmatic CDM projects that widely distribute improved cook stoves. In Sub-Saharan Africa, 90% of households rely on fuel-wood and charcoal for cooking and heating. Respectively, the sector generated more than USD 8 billion in 2007, with more than seven million people dependent on fuel-wood and charcoal production⁵.

Kissinger et al. (2012) recently reviewed 31 national REDD+ Readiness Preparation Proposals and identified 19 intervention strategies that are related to forestry, including sustainable man-

⁵http://siteresources.worldbank.org/EXTAFRREGTOPENERGY/Resources/717305-1266613906108/BiomassEnergyPaper_WEB_Zoomed75.pdf

agement of forests, fuel-wood efficiency, FLEGT and community forest management. The R-PPs identified sustainable management of forests as the most common intervention with specific activities related to inventories, forest management plans, improved silvicultural management, forest certification and improved concession management. Forest degradation largely responds to changing local, national and global-scale economic opportunities and/or policies (Geist and Lambin, 2002). Hence it first requires a good understanding of the complex set of proximate or direct causes and underlying driving forces and secondly targeted policy and market interventions. Underlying or indirect drivers include economic growth based on the export of primary commodities such as timber and an increasing demand for timber in a globalizing economy (Kissinger et al. 2012).

3 Forest management types and related financing mechanisms

3.1 Forest management types

Given logging and timber extraction are main degradation drivers, improved forestry practices through investments in forest management provides the opportunity for decreasing emissions related to degradation while safeguarding environmental and socioeconomic co-benefits. Forest management differs depending on the type of forest under production. Here we describe four general forest types according to the level of human intervention and Table 1 below briefly outlines their corresponding production capacity and management structures and potential for REDD+.

Natural forests include intact or primary or forests with limited human intervention. They mostly consist of native tree species that regenerate naturally or through assisted natural regeneration. They are usually not managed. Only a few are managed by governments, locally controlled forestry (LCF)⁶ arrangements, or through forest concessions and are mostly located in very remote areas with limited human pressure. The primary production target for managed natural forests is value timber for export and the domestic market consumption. Unmanaged natural forests are utilized for timber and fuel-wood. Increasing market access usually results in degradation if effective management structures are not in place. This forest management type is a target for REDD+ activities, especially given the increasing pressure on forests at the global level, and natural forests' high biodiversity and conservation values.

Degraded natural forests are characterized by their reduced capacity to provide forest goods and services. Degraded forests cover the spectrum between natural forests and non-forests with scattered trees described above. However, with increasing degradation, value timber production declines along with the provision of ecosystem services.⁷ Logging is often the initial driver of

⁶ Locally controlled forestry is defined as 'the local right for forest owner families and communities to make decisions on commercial forest management and land use, with secure tenure rights, freedom of association and access to markets and technology' (Growing Forest Partnership, 2012).

⁷ The provision of ecosystem services depends on the level of alteration / degradation. Slightly altered forests can be more diverse in structure and species and sequester more carbon than untouched natural forests.

degradation, often followed by unsustainable fuel-wood and charcoal production, which in many cases leads to increasing degradation and results in land conversion for agriculture. Globally, degraded or secondary forests cover large areas, in the range of 1bn ha, and hence restoring value to degraded forest can gradually reverse carbon and biodiversity losses.

Semi-natural production forests are intensively managed forests at the transition between natural and planted forests. Timber production is optimized but natural forest structures and natural regeneration is favoured whenever possible. However, in order to match ecological conditions with production objectives, species composition and stand structure may need to be modified. In general, forest management has multiple production objectives, i.e. a combination of fast growing introduced and slow growing indigenous hardwoods that provide strong biodiversity benefits and other ecosystem services. Special attention is usually given to specific valuable timber species that grow vigorously and are of good stem quality, while minority species are maintained for ecological purposes. Globally, the forest area managed as semi-natural production forests is still relatively small since this form of management requires great silvicultural management expertise.

Forest plantations cover 1.4 % of the global tropical forest area. In Latin America, 0.4 % of the forest area is plantations, found mostly in Brazil. In Africa, 0.3 % and in Asia-Pacific region almost 5 % of forests are plantations mainly in India and Thailand (ITTO, 2009). Most forest plantations are planted with a single tree species. Eucalyptus accounts for 24 % of the plantation area and their share is increasing, followed by 18 % pine, 17 % rubber, 17 % teak and 9 % acacias (ITTO, 2009). Eucalyptus, pines and acacia are used for pulp, energy and timber. The slower-growing teak is used for construction wood and furniture. Hevea plantations are mainly used for rubber and latex. However, recently more and more hevea timber is on the market coming from old, unproductive rubber plantations.

Table 1: Forest management types

	Natural forests	Degraded natural forests	Semi-natural production forests	Plantation forests with (introduced) single tree species
Most frequent current utilization / management	No commercial use or un-sustainable harvesting (mainly value timber)	Unsustainable harvesting (timber and energy wood)	Sustainable multipurpose forest management	Maximisation of timber, pulp or energy wood production
Condition for high REDD+ potential Either high baseline emissions or low baseline removals	Deforestation/ Degradation pressure high = high baseline emissions	High baseline emissions in slightly degraded forests or high removal potential in heavily degraded forests	High removal potential in heavily degraded forests	Bare land
Potential management	Conservation by protection (natural reserves) Conservation by sustainable management of forests	Restoration by sustainable management of forests	Sustainable multipurpose forest management	Sustainable management of forests focussing on timber or energy wood production
Coming from (initial situation) ↓ Going to (targeted situation)	Natural forests ↓ Natural reserve or ↓ Sustainable managed natural forest	Degraded forests ↓ Sustainable managed natural forest or ↓ Semi-natural production forest	Bare land or heavily degraded forest ↓ Semi-natural production forest	Bare land ↓ Plantation forests
Main characteristics (targeted situation)	Selective and light interventions, no changes in structure and tree composition	Depending on initial situation similar to left or right column	Intensive interventions in tree composition and structure resulting in strongly modified multiple species forests	Highly productive, normally even-aged and single tree species

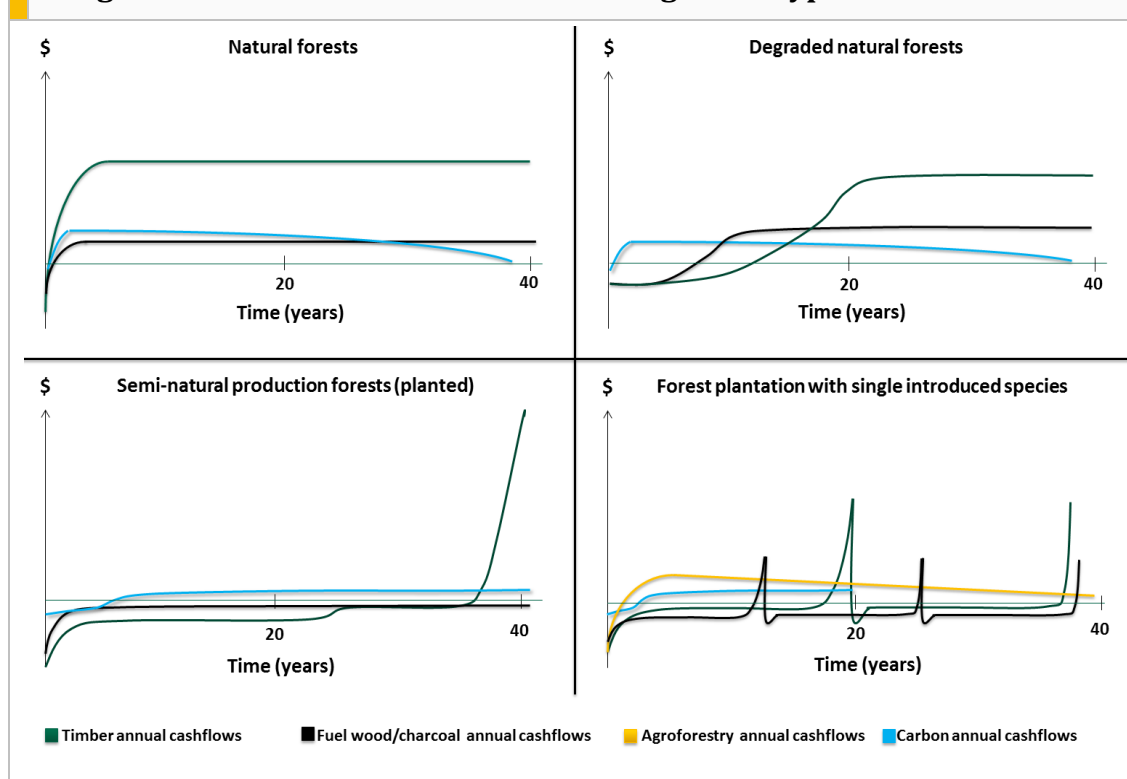
Produced goods	Value timber Standard timber Energy wood for local consumption NTFP	Value timber Standard timber Energy wood for local consumption NTFP	Value timber Standard timber Commercial energy wood NTFP	Value timber Standard timber Pulp Commercial energy wood
Ecosystem services*	Intact	Reduced	Slightly reduced	Reduced

Source: UNIQUE forestry and land use. NTFP: Non Timber Forest Products

* Ecosystem services include: Biodiversity, e.g. conservation in protected zones and sustainable use of biodiversity; Climate related services, e.g. carbon storage, and climate change adaptation; Soil conservation, e.g. erosion control, soil health and Water related services including groundwater recharge, filtration, reduced run-off etc.

The four forest types and their corresponding management structures not only provide distinct flows in product and ecosystem services, including biodiversity protection, they also have distinctive investment and cash flow profiles. The classification in Figure 4 helps to better understand the different private investment options related to REDD+, including the mitigation, biodiversity and social cost effectiveness.

Figure 4: Cash flows of ideal forest management types



Source: UNIQUE forestry and land use. Note bene cash flows are project specific and the above figures are presenting cash flows for ideal forest management types.

Natural forests are mostly managed either for conservation or extensively for value timber production. The required investments per hectare as well as the returns are quite low but constant. For commercial operations large areas need to be managed. Lacking road and market access is limiting the production potential. In addition, significant forest management capacity is required to produce value timber sustainably in natural forests. Without tenure and governance enforcement mechanisms in place sustainable value timber production is not possible and is often leading to forest destruction due to road construction and in-migration. If deforestation pressure and forest density is high the initial carbon payments will be high, but these payments will gradually drop over time as deforestation rates decrease due to sustainable management of forests.

Degraded forests when highly disturbed require large frontloaded investments per hectare to restore the ecosystem and timber production functions. However, investments are often attractive because high degradation often correlates with close by markets. Positive cash flows for charcoal or fuel-wood production can be generated earlier than from timber. In slightly degraded forests the cash flow and carbon benefit patterns are comparable to those of natural forests, except that positive cash flows from timber production occur at a later stage, depending on the time demand to restore the production potential. Depending on the degree of forest degradation, investments in replanting or assisted regeneration may be required but are in general only economically viable if the site conditions are favorable. Forests characterized by replanting or assisted regeneration have been defined as semi-natural production forests.

Semi-natural production forests also require different levels of upfront investments and have different cash-flow pattern, depending on the trees to be planted and the management capacity. However, investments are lower compared to forest plantations because natural automatization processes are favoured and the forest management type provides. The cash flows and carbon sequestration potential depend on the baseline situation, which is highly variable.

Forest plantations in general have large upfront investments and the carbon sequestration benefits – if established on non-forest – occur later. For reforestation and afforestation activities related to voluntary and CDM carbon markets, a number of carbon accounting methodologies have been established and there is plenty of experience with respective activities. Forest plantations also include agroforestry systems where revenue streams occur from a combination of tree-based and agricultural commodities such as timber combined with coffee, timber with cocoa, fruit trees or livestock combined with timber.

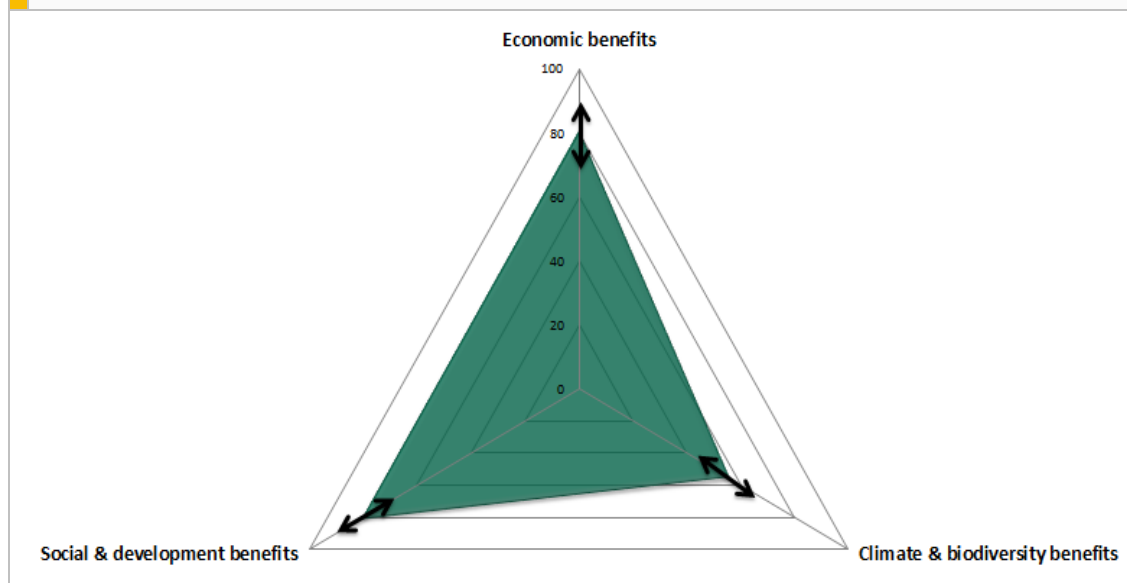
According to our experience with an array of forest carbon projects, carbon payments have a relatively small contribution to the overall Internal Rate of Return (IRR) of the investment. The IRR ranges from 1-3 %, depending on the project type, amount of carbon that can be generated along a given time scale and of course the carbon price. The cash flow profiles presented below

provide examples of different forest conditions, forest growth patterns, timber prices, taxation, labor cost and production cost.

Synergies and trade-offs between forest management related carbon, environmental, social and economic benefits

Depending on their design, forestry projects have distinct carbon, environmental, social and economic benefits. The different benefits can be regulated in order to achieve different objectives (see Figure 5 below). Economic optimization, under the correct circumstances, has often strong synergies with social and rural development performance, mainly due to the increased productivity of the forest and the associated increase in direct and indirect local employment and rural economic activities. On the other hand, carbon, environmental and biodiversity optimization can lead to trade-offs, e.g. economic losses if conservation areas are excluded from production. The trade-off between economic and carbon benefits depends on the carbon price and e.g. if harvested wood product accounting is considered in the case of timber production related project activities. In general, the economic performance of a carbon optimized project is lower compared to a timber production optimized project since revenues from carbon are smaller compared to timber related revenue streams. Depending on the location, conservation-related income can compensate for production-related losses, but at a global scale these cases are relatively rare. A forest management regime with strong, but balanced social, environmental and economic benefits may generate the highest risk-adjusted returns for the forest user as well as society.

Figure 5: Synergies & trade-offs related to forest management benefits



Source: UNIQUE forestry and land use

3.2 Forestry investment mechanisms

Forestry investments are carried out through labor input and balance sheet investments. Financing vehicles are also used to attract private investment. The different sources of forest investments are categorized below.

1. Investments by local forest rights holder

Local forest rights holders are mainly small- and medium-sized forestry enterprises (SMFE) with less than 20 employees. Forests may be individually or community owned. The term locally controlled forestry (LCF) is used to describe this situation in general, which varies largely in different forest and country contexts. Estimates suggest locally controlled forestry employs 20 million people; or even up to 100 million people if the informal sector is considered (Macqueen et al. 2012). SMFEs primarily invest in terms of labor and small savings and do not have the capital or fiduciary capacity to make large investments typical of many industrial-scale enterprises operating in tropical forests. However, the cumulative impact of SMFEs can be substantial and in countries such as Indonesia and Cameroon, they produce timber comparable in volume to the industrial forest industry. Therefore, locally owned and operating SMFEs must be included in this assessment of private forestry sector investment potential for REDD+.

2. Equity investments

The investor buys shares of a forest management company / forest projects either directly or through a Timber Investment Management Organization (TIMO), which is a private equity investment vehicle to buy, manage, or sell forests and timber on behalf of the investors. For large institutional investors such as pension or insurance funds that do not need risk hedging within a single investment, TIMOs are the most cost-effective forestry investment option. Equity investments are the most basic and direct investment possible, with the best performance chances on the one hand and the highest risks on the other hand. Therefore, before investing, the investor should conduct an in-depth due diligence of the project, including the company's management. Well-known examples for forestry companies with equity investments are the Swiss company Precious Woods or Green Resources in Africa operating in Tanzania, Uganda and Mozambique.

3. Private investments through public funds

Some private investment funds are open to the general public, meaning any person can invest in the fund. Public funds are normally closed-ended funds, i.e. the period to collect and invest money is pre-defined. In the German-speaking region, there are at least 10 public funds for forestry, e.g. BaumInvest, ShareWood, Lignum, Forest Finance. The target group is natural private persons with an investment volume between roughly USD 5,000 and USD 50,000. These investors usually have a strong interest in social and environmental sustainability. The total investment volume of these funds is very small, especially compared to the global sum of forestry investments (probably < 1 %). However, these public funds are highly visible, and therefore

dominate the discussion in Germany on forestry investments. Due to high marketing and transaction costs from the collected amount, a smaller share is actually deployed in the project compared to the other three investment types. It is to be expected that the return on some of these public funds will not fulfill the forecasts given to the investors (Grulke et al 2010). Some forecasts may be off by far due to overly optimistic underlying forest growth models or timber prices, resulting in losses to the credibility of forestry investments. Therefore, all serious forestry investment project developers and implementers must carefully observe this threat in order to avoid important losses as much as possible.

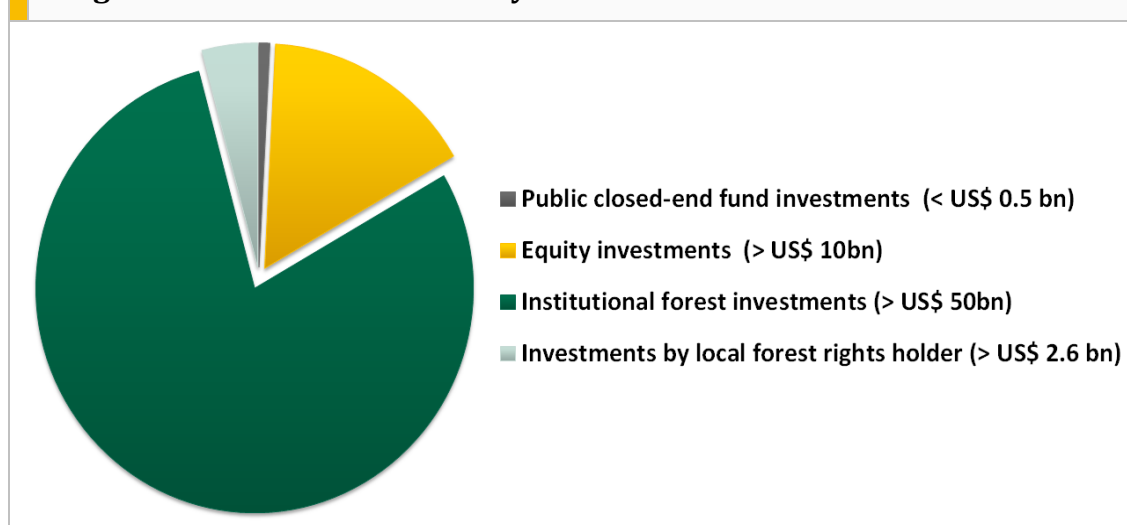
4. Funds for institutional investors

This category of funds applies to institutional and semi-institutional investors such as insurance companies, pension funds, investment banks or foundations. There is normally a fixed minimum investment of about USD 1 million for semi-institutional and USD 5 million for institutional investments. Funds hedge the risk of single investments by investing in different regions, projects types and project managers. Although the risks are hedged, funds have additional transaction costs compared to direct investments, which reduces the returns.

Most forest funds only invest in single species forest plantations. Examples are the Capricorn Fund managed by IWC or the Phaunos Timber Fund managed by Four Wind Capital, offered to retail clients through Deutsche Bank. Some funds also invest in natural forest management such as the Africa Sustainable Forestry Fund (managed by GEF), which has a natural forest management project in Mozambique, although most investments are made in forest plantations, including a 10,000 ha teak plantation in Tanzania. The Tropical Asia Forest Fund (TAFF) managed by New Forests also mainly invests in plantations but is open for natural forest management. Last year, the first fund was established that purely invests in REDD+ projects, which is the Terra Bella Fund, managed by Terra Global Capital and supported by a guarantee line and capital from the Overseas Private Investment Corporation.

The pulp & paper industry (e.g. Mondi, Aracruz and Stora Enzo) and sawmilling / veneer producers, such as Danzer in Congo-Brazaville, Steinhoff Group in South Africa or Barito Pacific Timber in Indonesia, frequently engage in backwards integration. We classify these investments as value chain investments (further described in Section 5 below) because the engagement in forest management is limited mainly to securing resource supply. Investors in these companies invest in industrial processing and the forest asset is usually rather small when taking the entire balance sheet into account.

Figure 6 below compares these four investment mechanisms by roughly indicating the amount invested by local forest rights holders, private investments through public funds, and equity and institutional investors through fund vehicles. The available data is very limited and highly uncertain; therefore the size of each investment category is only suggestive.

Figure 6: Forest investments by volume from different sources

Source: Brand (2012), SAM and Indufor (2010), Forum for the Future (2009), Macqueen et al. (2012), UNIQUE.

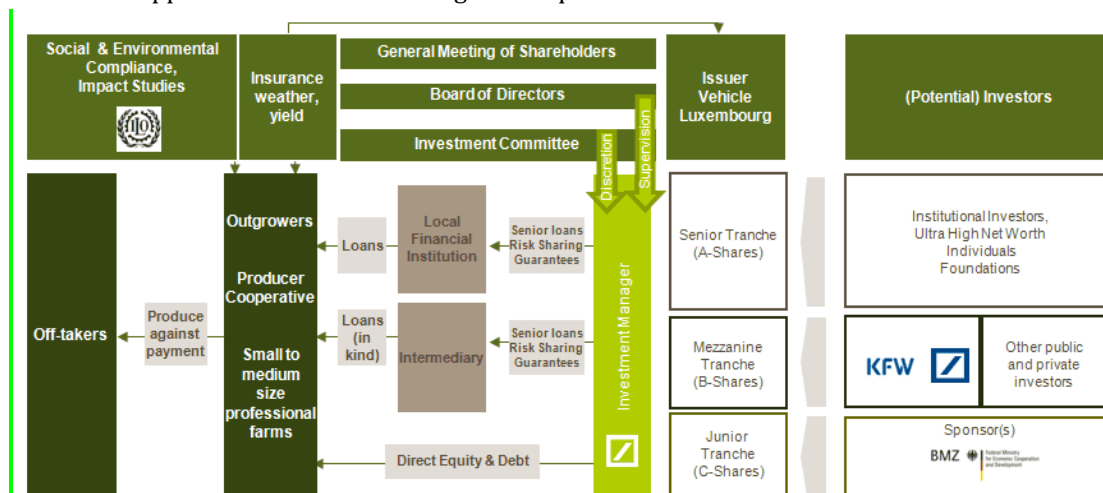
Nota bene the scale of forestry investments is roughly estimated it mainly serves to highlight the difference in scale between the different sources of investment. Labor and other in kind investments are not considered.

The average returns on investment vary, ranging from 4-8% for private investment in public funds to 12-14% for direct equity investments. The returns on investment by local forestry rights holders also vary but are generally expected to be higher, which is also associated with an increase in risk. In order to boost investments by local forest rights holders, which include indigenous peoples, forest communities and private family smallholders, Box 1 below provides an example of a fund structure to support public-private land use investments. Although it was designed for investments in agriculture, the structure provides a number of innovative mechanisms that are also promising for forestry related REDD+ investments.

Box 1: Concept for a “Public-Private Institutional Forest and Climate Fund” based on the KfW AATIF

The Public-Private Institutional Forest and Climate Fund should aim to reduce deforestation and forest degradation in the target country through domestic and international public-private investments in sustainable company-community forest management partnership. Based on the model from the KfW Africa Agriculture and Trade Investment Fund (AATIF), different shareholder structures reflecting different investor risk-return profiles. According to the preferred risk/return profile, the Fund would be structured to allow investments at three different levels, each offering a unique risk/return profile with dividends being paid following a waterfall principle. This means A share investors commit themselves for a period between 3 to 15 years in the Fund and will receive their money back plus a dividend depending on the fund performance. A share investors receive their investment back before the other share holders and therefore have a very low risk, but also expect lower dividends. B share investor rank junior to A shares hence there is an increased risk to lose money, but also an increased profit expectation. C shares bear the largest risk (First Loss) and therefore are kept by public or other investors that are interested in catalytic investments. For all shareholders the dividend depends on fund and related project performance and the distribution reflecting the risk profiles. The distribution of the dividends will be determined by the Fund Board, which is representing all shareholder classes.

The Fund would invest in companies or forest producer associations that are strong enough to manage respective investments. In case associations do not have the investment management capacity, forest enterprises would act as intermediaries. In addition similar to the AATIF there would be a technical assistance support facility providing capacity and knowledge related assistance and support to meet certain safe-guard requirements.



However, a number of important details such as the voting rights within the investment committee and the investment criteria including production and safeguard standards need to be looked at in order to balance climate, biodiversity and social benefits with forest operational requirements and the profit expectations of the forest enterprises and the investors.

Important is also the consideration of equity issues, i.e. providing opportunities for local forest rights holder to benefit from the fund or special interest groups such as woman or indigenous people associations. With regards to the public oversight we recommend that the Board is including an NGO representative, e.g. FSC or WWF.

The facility could support specific carbon MRV features that over time will inform if the fund investment criteria should be modified to maximize and balance Fund objectives.

Source: adapted from KfW Africa Agriculture and Trade Investment Fund (AATIF), <http://www.aatif.lu>

3.3 Forestry project risks and mitigation strategies

In many REDD+ countries, real or perceived risks are important obstacles to attracting private forestry investments. Lowering the risks, e.g. through improving national institutional capacity for law enforcement, providing more secure land tenure or reducing the political risk of changing investment and taxation regimes, can attract more investment with lower return expectations. Reputational risks are particularly relevant for foreign direct investments in forestry because such risks are the main reason most institutional investors, including development finance institutions, decide not to invest in SFM of natural or degraded forests. The European Investment Bank provides a good example for this conservative investment strategy: with one of the biggest forestry sector lending portfolios of currently around EUR 4.5bn, roughly two thirds is invested in the timber wood industry and one third in forest plantations, mainly with single species plantations.

Forestry risks can be classified into four general categories:

1. **Production risks** affect the provision of timber and biomass from a forestry investment project. Professional forest management can mitigate most of these risks.
2. **Market risks** refer to risks of whether the timber harvested can be sold at the assumed prices. Production site and product diversification can mitigate the risks.
3. **Political risks** have an effect on the overall situation of a forestry investment. This includes how the investment may be affected by the legal and tax framework and governance context of the respective country. Management options are limited for the forestry sector.
4. **Reputational risks** refer to the public perception of the investment. Professional management according to international standards and local participation and benefit sharing can reduce the risks.

Given the risks surrounding investments in tropical forests and the high amount and long term up-front investments required, the majority of private sector investment in the forest sector is in plantation forestry, which represents the least risk.

The goal of public co-investments is to support private sector investment in the sustainable management of the remaining natural and degraded forests given the higher environmental benefits in terms of biodiversity and preventing direct conflicts with food security. Such investments will also increase the opportunity cost of forestry against other land uses and maintain the carbon stocks of forests. A timely and promising strategy for reducing these risks and improving the investment climate for sustainable forestry is supporting the EU's FLEGT Action Plan, further described below.

3.4 The role of FLEGT in encouraging private investment in REDD+

Illegal logging is widely recognized for causing environmental, social and economic harm, resulting in billions of Euros in lost revenues for Governments in tropical forest countries. In this con-

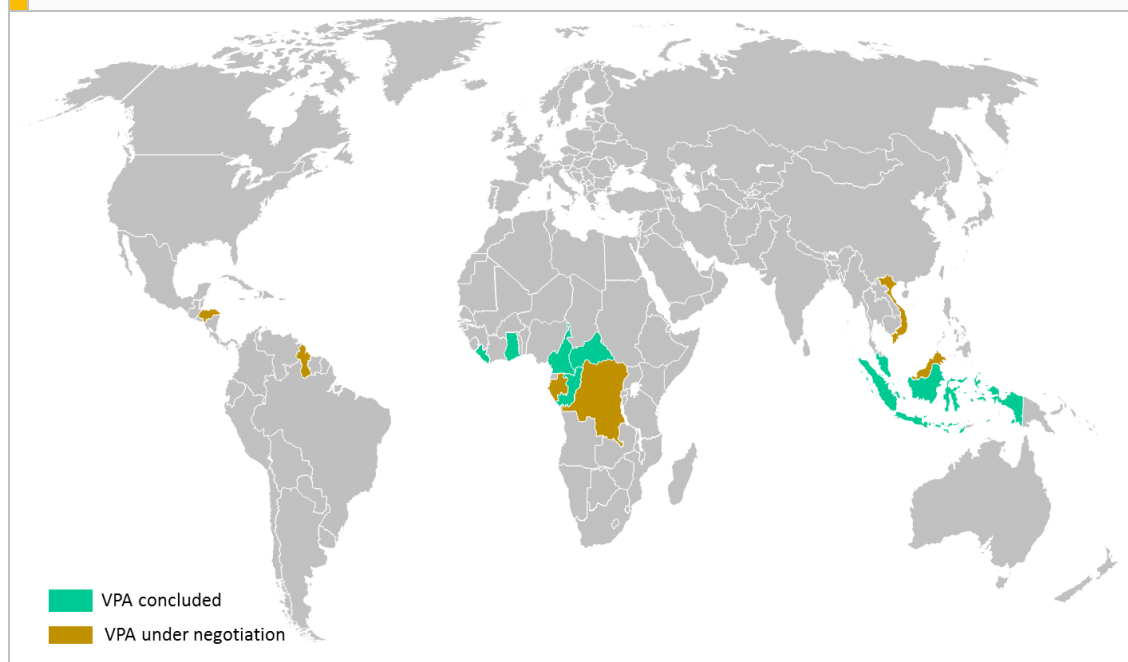
text, the EU adopted the FLEGT Action Plan in 2003, which incorporates innovative demand and supply side measures to tackle illegal forest activities in timber producing countries and illegalities along the global timber supply chain. .

The EU, being one of the biggest global markets for timber products, has passed new legislation prohibiting the placing of illegally harvest timber on EU markets. The EU Timber Regulation (EUTR) requires operators to show FLEGT legality licenses or carry out due diligence when placing timber products on the EU market.

On the supply side, FLEGT Voluntary Partnership Agreements (VPA) help exporting countries meet EUTR requirements by developing the systems required to produce a FLEGT license for timber. These Agreements have been bi-laterally negotiated between the EU and timber-exporting countries. VPA negotiations included the participation of a wide range of national forest stakeholders during VPA negotiations, which often sparked unprecedented debates about the forest governance and law reform required in order to successfully implement a VPA (EC 2012). For example, many VPA partner countries are now engaged in forest law reform that supports the strengthening of land and forest tenure rights of communities and local forest owners.

The majority of countries that have signed and ratified FLEGT VPAs are in Central and West Africa. Central African Republic, Indonesia, Liberia and Republic of Congo have concluded VPA negotiations and Ghana and Cameroon have ratified their VPAs into national law. Numerous other countries have expressed interest in entering VPA negotiations with the EU and those who are formally engaged in VPA negotiations are highlighted in the map below.

Figure 7: Countries engaged in FLEGT VPAs



Source: EFI FLEGT Facility, http://www.euflegt.efi.int/portal/home/vpa_countries/ (accessed 12.12.2012)

The immediate goal of the EU's FLEGT Actions Plan is to reduce illegal logging and related trade with the EU. However, most VPAs signed to date go much further to support the legalization of the entire forest sector, including the wood circulating on national and regional markets. This corresponds with FLEGT's longer-term goals of sustainable management of forests, poverty reduction and governance reforms in VPA partner countries. UNIQUE forestry and land use GmbH's experience in Paraguay portrays how domestic law enforcement provided significant incentives for private forestry investments because the competition with illegally sourced wood products was eliminated (see Box 2 below).

It is too early to assess the impact of the EU FLEGT Action Plan on private forestry investments. However, given the fact that FLEGT places special emphasis on governance reforms, as poor forest governance has been recognized as a root cause of illegality (EC 2012), it is highly likely that FLEGT will improve the general business climate for forestry operators in VPA countries. This will also provide important opportunities to tap into the investment potential of local timber enterprises serving domestic markets, as explained further in Box 2. Achieving synergies between REDD+ and FLEGT through fostering private investments in sustainable forestry practices is a goal shared by policy-makers and forestry practitioners.

Box 2: Forestería Certificada en Paraguay (FORCERPA): Law enforcement benefits for REDD+ implementation

FORCERPA is the only FSC certified managed natural forest in Paraguay. For more than 15 years, the enterprise demonstrates that sustainable forest management can reduce forest degradation and deforestation pressures. Initially, due to very low domestic timber market prices (mainly because of illegal logging) the enterprise was export-oriented and thus invested in FSC.

In the beginning, it was difficult for this small enterprise to organize its long export-oriented value chain profitably and the scaling and replication potential of this business model was limited. However, when Paraguay enhanced its forest law enforcement capacity in 2007/2008, the share of illegal timber in the domestic market decreased drastically. As a result, domestic prices for timber increased by a factor of 2.5 between 2007 and 2012. This change in policy and the subsequent reduced competition from illegal timber suppliers made sustainable timber production profitable on the domestic market. Today, the enterprise mainly supplies domestic timber demand and a number of private and cooperatives forest owners in Paraguay are starting to invest in sustainable forest management.

Some project characteristics are presented below:

Management concept

- FSC certified natural forest management on 5,650 ha (4,00 ha production, 1,650 ha protection)
- Integrated timber processing
- Joint Venture between agribusiness and forest management company

Impact

- Protection of Atlantic Forest (biodiversity hotspot)
- Regular monitoring: Tree species diversity in managed forest as high as in untouched forests
- Generation of 50 qualified jobs
- Partnership with adjacent indigenous community

Financials

- Annual turnover USD 1,000,000
- Revenues after tax: USD 70/ha/yr (eye level with ranching)

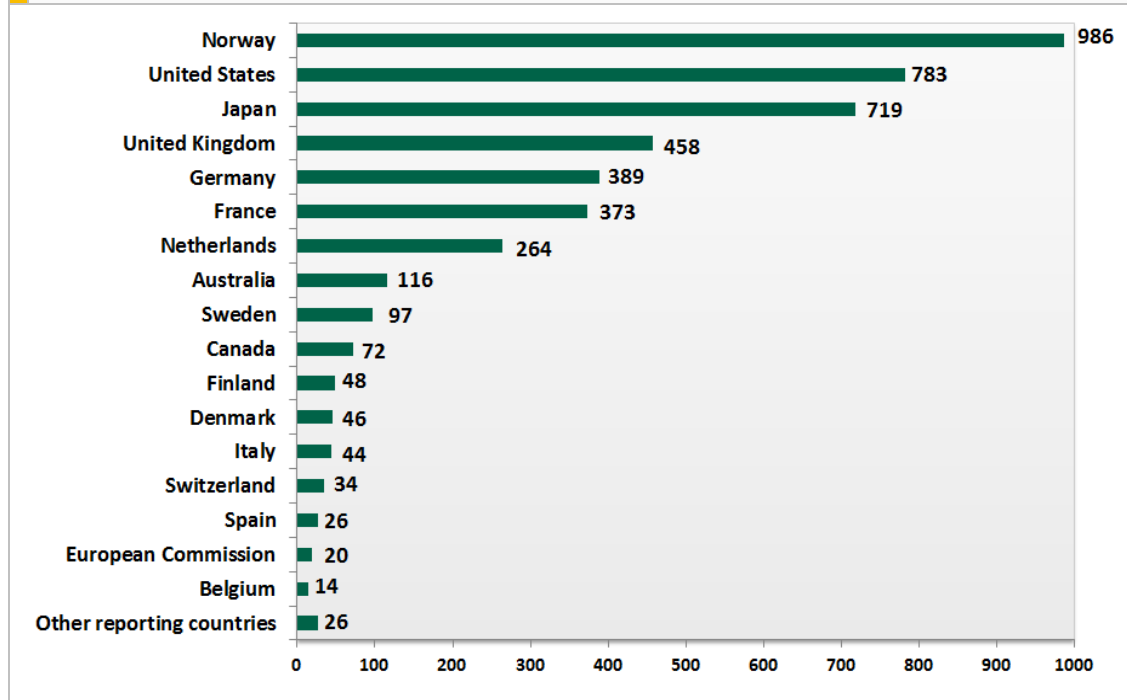
Source: UNIQUE forestry and land use

4 REDD+ financing mechanisms

Private sector investment in REDD+ is currently insignificant compared to private investments in the forestry sector. Today, the available REDD+ finance is mainly provided by public funds for REDD+ readiness related to national and jurisdictional REDD+ readiness processes. Norway is the only investor engaged in a bilateral result-based payment contract and the German REDD Early Mover programme (REM) soon will also engage in bilateral result-based payments. According to the Voluntary REDD+ database (VRD, 2012), nearly USD 4.5 billion has been allocated or approved as of December 2012. The source of the funding is presented in Figure 8 and the destination of the funds is visualized in Figure 9.

Domestic REDD+ funding, in particular in emerging economies such as Brazil, Mexico and Indonesia, is more significant. Streck and Parker (2012) estimate that domestic REDD+ funding allocated is over twice the size of international REDD+ financing.

Figure 8: International fast start REDD+ finance allocated 2010 - 2012

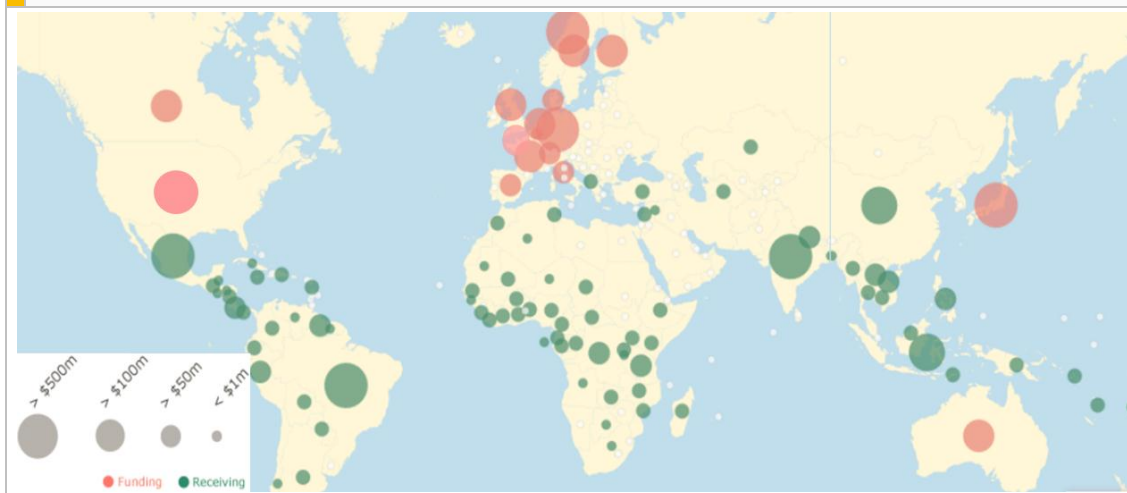


Source: Data is based on the Voluntary REDD Database, December 2012 and the Prince Charities 2012. Domestic funding excluded

Figure 9 below shows the sources (in red) and destination of REDD+ funding (in green). The investment distribution probably rather reflects equity considerations and country preferences

(see significant investment in Africa) than cost efficiency and risk considerations which would suggest bigger investments in Brazil.

Figure 9: International REDD+ funding source and recipients



Source: Voluntary REDD+ Database modified, December 2012. Note bene numbers are submitted on a voluntary basis and if certain actors do not report there be large discrepancies.

4.1 REDD+ projects with sustainable management of forest practices

Most REDD+ projects are developed by large international conservation NGOs in partnership with local NGOs. These project developers generally see REDD+ as a mechanism to finance forest conservation through carbon markets. Only three projects located in Brazil (2) and Peru apply sustainable management of forest practices in accordance with the Forest Stewardship Council (FSC).

These three projects are unique in that the forest is under private ownership. Most REDD+ projects under preparation operate on community or government owned land within protected areas. Upfront financing is mostly provided through grants or development aid, or in kind by local communities. The private sector involved is mainly carbon trade consultants, or carbon credit buyers interested in demonstrating corporate social responsibility.

Most of these projects address small-holder agricultural expansion and charcoal / fuel-wood extraction as the driver of deforestation and forest degradation. Conservation management and improved agricultural practices are the strategies used to reduce these deforestation and forest degradation drivers. All projects have to invest in substantial measurement, reporting and verification (MRV) and the validation, registration and verification of related emission reduction activities. Direct carbon payments to local land user often take place, but are only commercially

viable if either the upfront investment is (partly) covered by a grant. Forward contracts for emission reductions do not apply a strong discount for the risks involved in upfront payments⁸.

Investment barriers for forest management related REDD+ activities

A number of development institutions and foundations, as well as social and wildlife conservation entrepreneurs have developed REDD+ projects for the voluntary carbon market, but surprisingly few established forestry enterprises have shown interest in REDD+. This may be due to various reasons, including:

- Forestry enterprises that are already managing forests sustainably cannot claim emission reductions from deforestation and forest degradation within their current areas of operation.
- In areas with high deforestation and forest degradation, forestry enterprises cannot operate due to unfavorable forest governance, e.g. illegal timber extraction and trade makes sustainable production not commercially viable.
- Revenues related to generating carbon credits are relatively small and the transaction costs are high, especially compared to potential timber revenues in well managed and stocked forests. REDD+ remains unprofitable and thus unable to divert the limited management attention for forestry enterprises.
- Knowledge and capacity gaps related to REDD+ opportunities for forest management enterprises

Without the engagement of forestry, enterprises and related value chain expertise, private long-term finance for REDD+ implementation may not become available at the scale required. This then questions the long-term sustainability of REDD+. Carbon credits can be a temporary source of finance until no further deforestation in the baseline can be claimed. However, preserved carbon stocks require an enforced legal protection framework in combination with economic incentives for deforestation. For the latter, the proceeds from carbon credits have to be invested in alternative nondestructive land use related income sources, such as sustainable forestry activities, to ensure the permanence of the emission reductions (Merger et al. 2012).

Supporting forestry enterprises, particularly locally-owned enterprises, to engage in REDD+ in areas with high deforestation and forest degradation pressure can help to attract long-term private REDD+ finance for investments in sustainable management of forests. The FLEGT agenda, especially land tenure clarification and effective law enforcement, is a pre-condition for attracting long-term sustainable domestic and foreign direct investments in forestry and related value chains. Such measures are the preconditions for reducing forestry-related forest degradation drivers.

⁸ The Livelihoods Fund and the BioCarbon Fund illustrate the two different models. The Livelihoods fund is pre-financing all project activities and the benefits for the community are related to the restored fish and fruit production capacity related to Mangrove and Agroforestry systems. The BioCarbon Fund relies on grants for pre-financing from other development partners or foundations and therefore can make direct carbon payments to communities upon delivery of the emission reductions.

Moreover, initial analysis suggests well-managed forests with reliable timber value chains can compete with low input subsistence agriculture or cattle ranching (see Box 3). This is especially important considering that agriculture is the main deforestation driver and must be given more attention by researchers and REDD+ practitioners. REDD+ business models for forestry enterprises have to be developed as well as the capacity and the confidence of locally owned forest enterprises must be boosted in order to encourage them to investment in forests and their sustainable management.

Box 3: REDD+ Business Models in Paraguay

In a partnership between WWF, DEG and UNIQUE forestry and land use REDD+ business models and investment opportunities are currently analyzed in Paraguay. In the scoping phase four promising forest management initiatives that can contribute to REDD+ have been identified:



1. Golondrina

Golondrina is a private property located in the Department of Caazapá (Eastern Paraguay). The property is owned by the company Sociedad Agrícola Golondrina belonging to the multinational Rioforte Group and covers 24,000 ha mainly dedicated to intensive agricultural and live-stock management. Within the estate an area of 11,500 ha is native forest including 5,650 ha managed under FSC certification and 2,000 ha used by an indigenous community living within the property. The remaining forest area is currently not managed and under different stages of degradation.

2. Pantanal

This project case involves seven private properties located in the Department of Alto Paraguay in the northeast of Paraguay. The properties belong to large landowners and are used for extensive cattle breeding which is the main economic activity in the area. The seven properties cover a total area of 86,000 ha of which 50 % is already converted to rangeland. There are still 38,000 ha of unmanaged native forests, for some patches of this forest a permit that allows the conversion to

agriculture was issued (almost 4,000 ha). The options to prevent planned deforestation through investments in sustainable forest management are explored within the framework of this project.

3. Puerto Barra

Puerto Barra is a small-scale community located in the Department of Itapúa (Eastern Paraguay). The community covers an area of 500 ha most of which corresponds to native forest under no management.

4. Cooperative Volendam

This project case is located in the Department of San Pedro (Eastern Paraguay) and covers a total area of 56,000 ha. The area is owned by Volendam, a cooperative with 320 members dedicated to agricultural production and livestock breeding. In addition to agricultural land there are 1,100 ha of reforested land and 5,500 ha of native forest 1,000 ha of which are in advanced stages of degradation. A REDD+ project could also involve the surrounding community Cuatro Vientos which also has access to significant forest areas.

For the two most promising REDD+ investment opportunities the sustainable forest management capacity and the related climate benefits will be assessed. Subsequently, a business plan will be developed and the local forest owner/user association will be supported to attract a combination of REDD+ and forest finance.

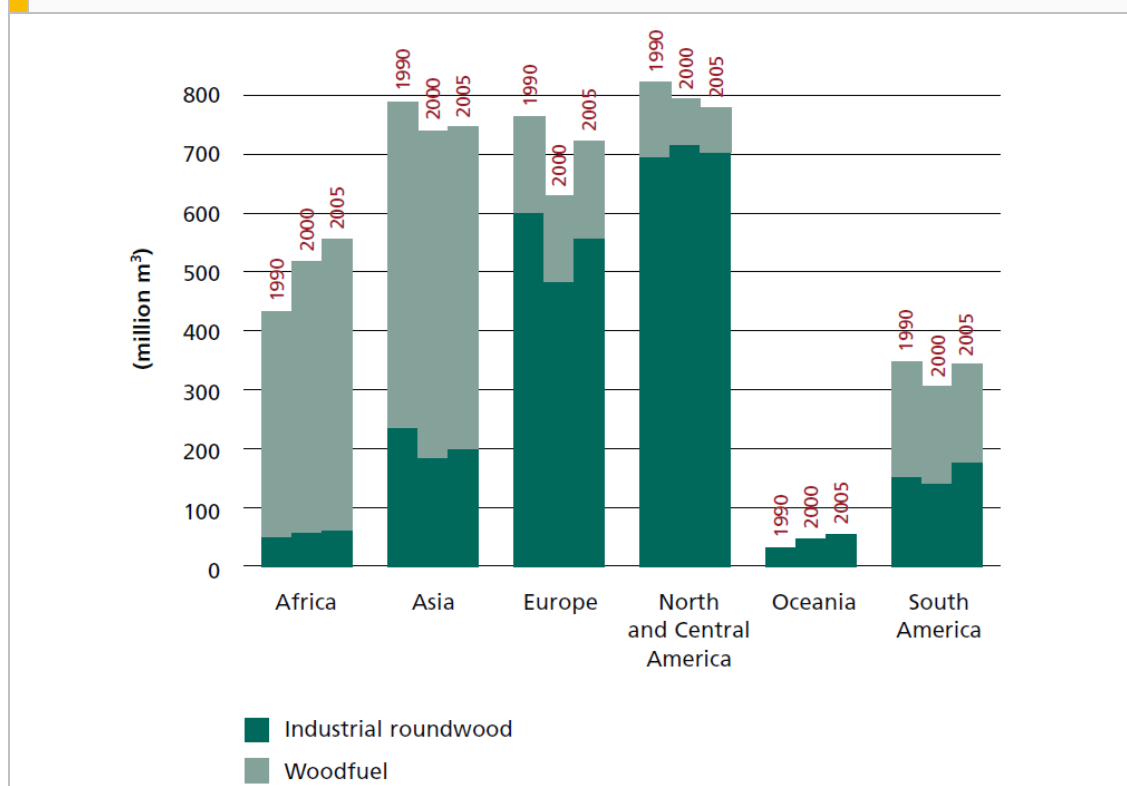
Source: UNIQUE forestry and land use

5 Tropical timber value chain related REDD+ investments

5.1 Tropical timber value chains

Unsustainable timber extraction, fuel-wood and charcoal use are the main drivers of forest degradation (see Figure 3). Moreover, these degradation drivers indirectly contribute to deforestation because unsustainable forest use increases the opportunity costs of forestry, i.e. the difference in revenue between forest use and the highest alternative land use, which is often agriculture. There are regional differences in fuel-wood and roundwood extraction: fuel-wood extraction dominates in tropical forests, in particular in Africa and Asia and parts of South America. Figure 10 below shows trends in timber and fuel-wood extraction between 1990 and 2005. Only in Africa fuel-wood extraction increased while roundwood extraction increased in Africa and South America.

Figure 10: Trends in roundwood and fuel-wood extraction 1990-2005



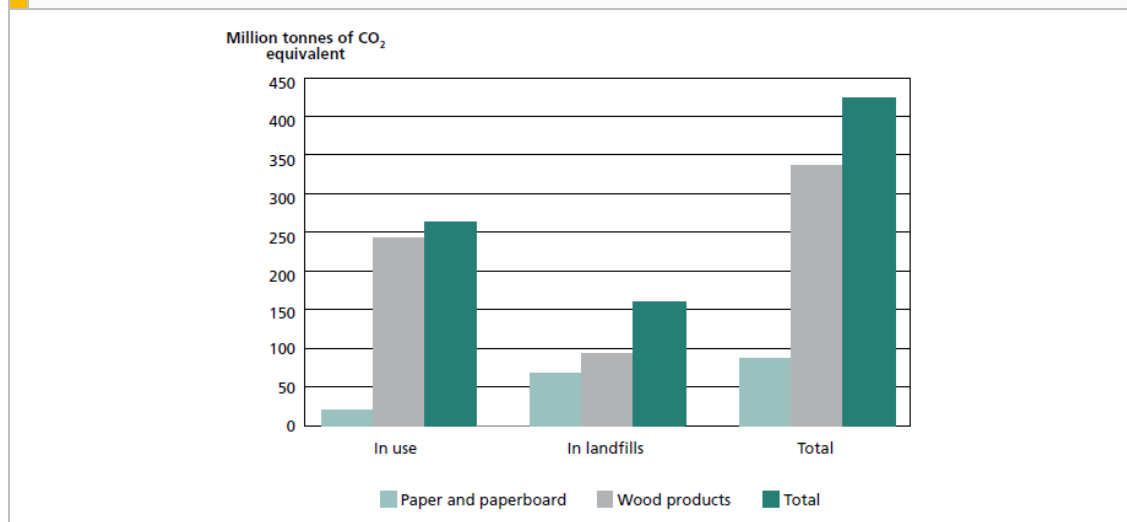
Source: FAO, 2012

There are basically two types of value chains that are demand-side drivers of deforestation and forest degradation in the tropics:

- Local energy demand and construction timber related value chains, usually characterized by informality and small-scale business
- International wood based commodity value chains, characterized by industrial level production, processing activities and large private investments

Although wood extraction is a major deforestation driver, the production wood products can also be a significant carbon stock. Especially if the forests are sustainably managed, timber and wood products, including wood-based energy, often offer a more sustainable alternative to fossil fuels and non-renewable resource based materials such as plastics and metal (see Figure 11).

Figure 11: Global carbon stocks in solid wood products



Source: Miner, 2010. Estimated long-term storage of carbon in products sold in 2007.

The demand for wood products is increasing and local and global value chains represent a significant pull factor for wood extraction in the tropics. However, higher recovery rates, reduced wood waste and more efficient stoves can significantly reduce wood demand. For example, the recovery rate in a sawmill in Uganda is about 20% while in Germany, 70% recovery rates are often the norm because wood residues otherwise used as waste are often used in a combined heat and power plant. The wood quality and characteristics are determined by the processors and the consumers.

International policies have identified market patterns as entry points to induce sustainable management of forests in producing countries, e.g., through regulative interventions such as the FLEGT initiative, the recently amended Lacey Act in the United States and the Renewable Energy Directive (RED) in the EU. Voluntary certification schemes such as FSC or PEFC also aim at demand-driven improvement of sustainable forest management systems.

The domestic and international demand of sustainable tropical wood products can trigger private investments in sustainable forest production with the indirect benefit of reducing deforestation and forest degradation. In the tropics, forestry enterprises often integrate production and timber processing industries, meaning the demand for sustainably produced timber can trigger substantial private investments by companies with rights to forests, i.e. through concessions. Combining raw material production (in plantations or natural forests) and processing facilities ensures raw material supply and quality, improves the rate of return (if efficiently managed) and offers more flexibility to react to market dynamics.

However, besides the industrial forest industries, millions of locally controlled SMFEs sustain their livelihoods from forest based value chains. These include chainsaw sawyers, charcoal producers and traders, small carpentries and those supplying domestic constructions sectors. Often operating in LCFs, the cumulative impact of such actors can be substantial and in countries such as Indonesia and Cameroon are as important as the industrial timber (Wit et al. 2010). Therefore, locally owned and operating SMFEs must be included in this assessment of private forestry sector investment potential for REDD+.

Value chain investments are important for both sets of private forestry actors. However, the types of investments in timber and forest product value chains are quite different. In order to better understand the value chains and their investments, a general categorization of the types of forest management systems and the corresponding value chains is detailed in Table # below.

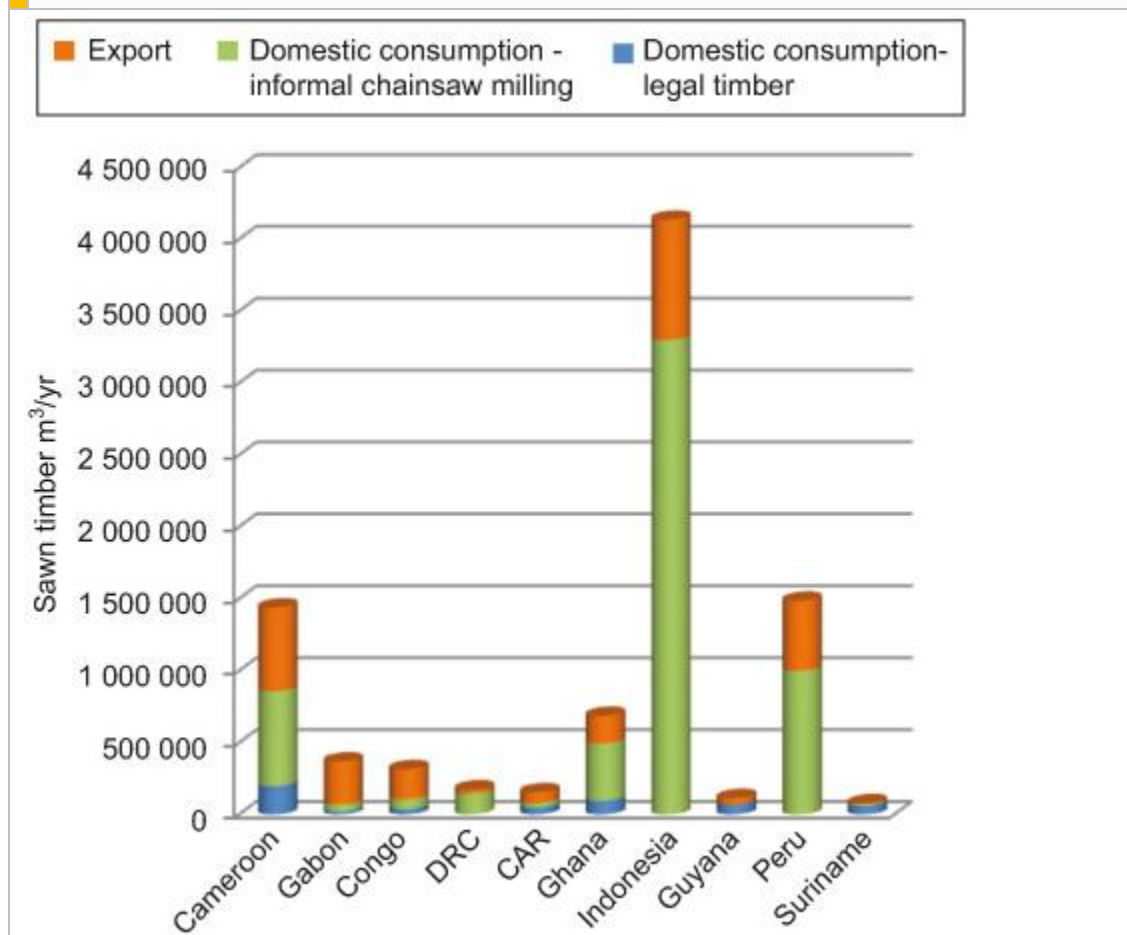
Table 2: Forest based value chains

Forest Management system	Economic actors	Forest products	Processed wood products	Markets
Natural forests under CPR	Communities, small holders, micro and small scale enterprises	Fuel-wood, timber	Low quality lumber, charcoal, fuel-wood	Local (and partly national)
Natural forest under concessions	Forest industries (private and public), communities	Industrial timber and value timber	High quality lumber, veneer, plywood, by-products	National and international
Planted forests	Forest industries (private and public), outgrower schemes	Industrial timber and value timber	Quality lumber, particle and fiber boards, pulp and paper, wood chips, wood pellets	National and international

Source: UNIQUE forestry and land use

5.2 Wood products demand and trade

The total volume of extracted wood worldwide amounted to 3.4bn m³, of which 45% is timber and 55% is fuel-wood. These numbers only present the official domestic and international trade and therefore highly underestimate the real volumes extracted, which in a number of countries is only a minor fraction of the total timber and fuel-wood extraction, see Figure 12 below (Wit et al. 2010).

Figure 12: Wood products production 1965-2030

Source: <http://www.thecommonsjournal.org/index.php/ijc/article/view/327/276>

The volumes of internationally traded wood products are low compared to the overall production. Only 0.3% of the extracted fuel-wood and 7.6 % of the harvested timber are traded internationally. Modified wood based commodities such as panels and pulp are more widely traded with 29.2% and 24.4% export rate respectively (Table 3).

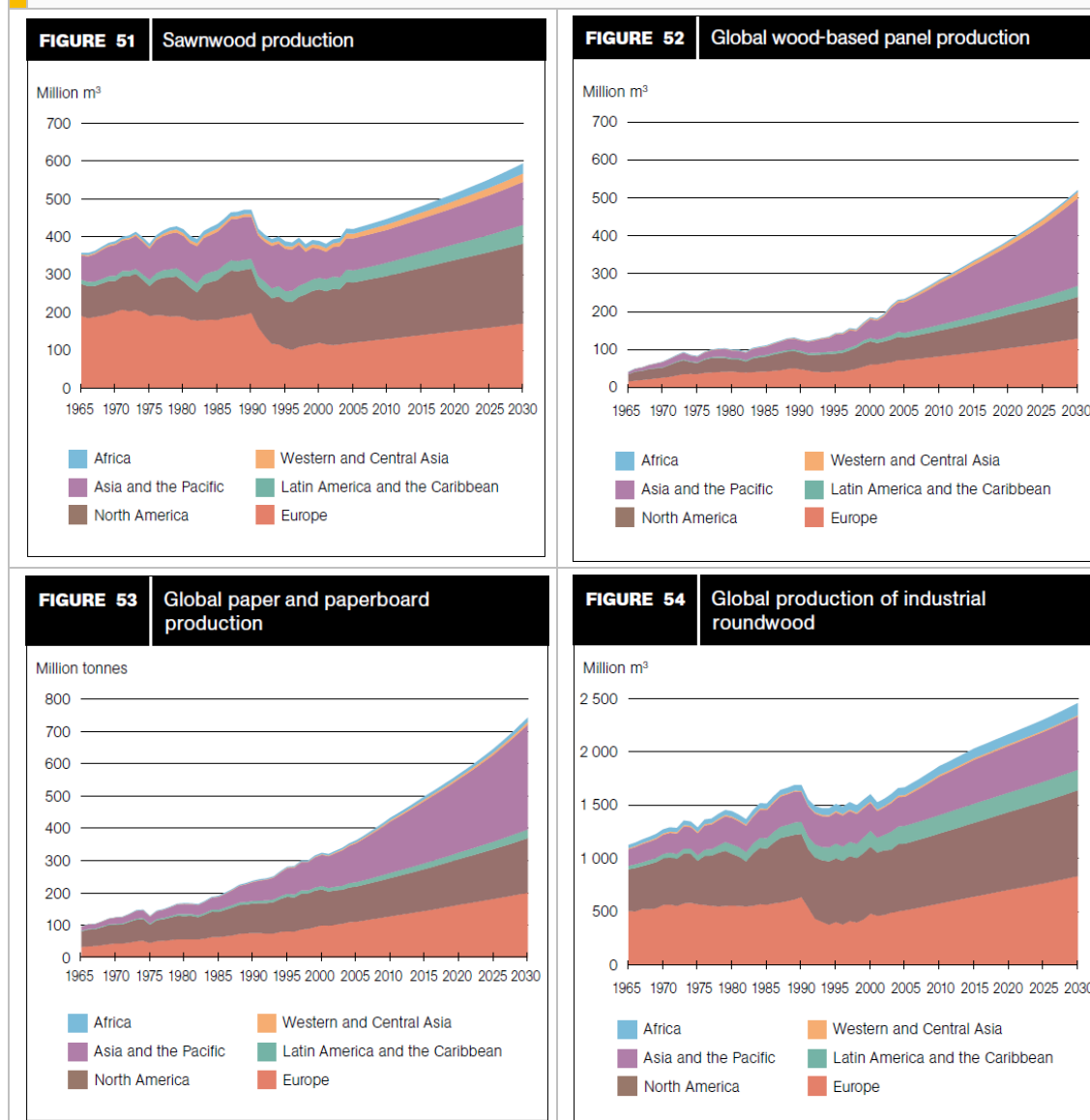
In tropical countries, official export rates are much higher. In 2008, about 22.7% of the sawn timber was exported. Furthermore 43.7% of the tropical plywood production was traded internationally. However, based on our experience, these figures frequently underestimate the local timber trade because the export trade is better regulated and taxed.

Table 3: Production and trade with wood products 2008

Wood product	Production World	Production tropics*	Exports tropics*	Exports World (%)	Exports tropics* (%)
Wood fuel (1,000 m ³)	1,868,386	n.a.	n.a.	0.3	n.a.
Industrial round wood (1,000 m ³)	1,541,971	141,000	11,800	7.6	8.4
Sawn wood (1,000 m ³)	400,246	44,000	10,000	4.7	22.7
Wood based panels (1,000 m ³)	268,788	18,300 ⁺	8,000 ⁺	29.2	43.7
Pulp for paper (1,000 tons)	193,146	n.a.	n.a.	24.4	n.a.

Source: Authors based on FAO, 2011 and UNECE/FAO, 2010 (*based on ITTO data; ⁺only plywood)

The future demand for wood products will significantly increase, e.g., global production of industrial round wood is expected to increase by 40% up to 2030; wood based panels and paper products experience even higher growth rates (Figure 13).

Figure 13: Wood products production 1965-2030

Source: FAO, 2009

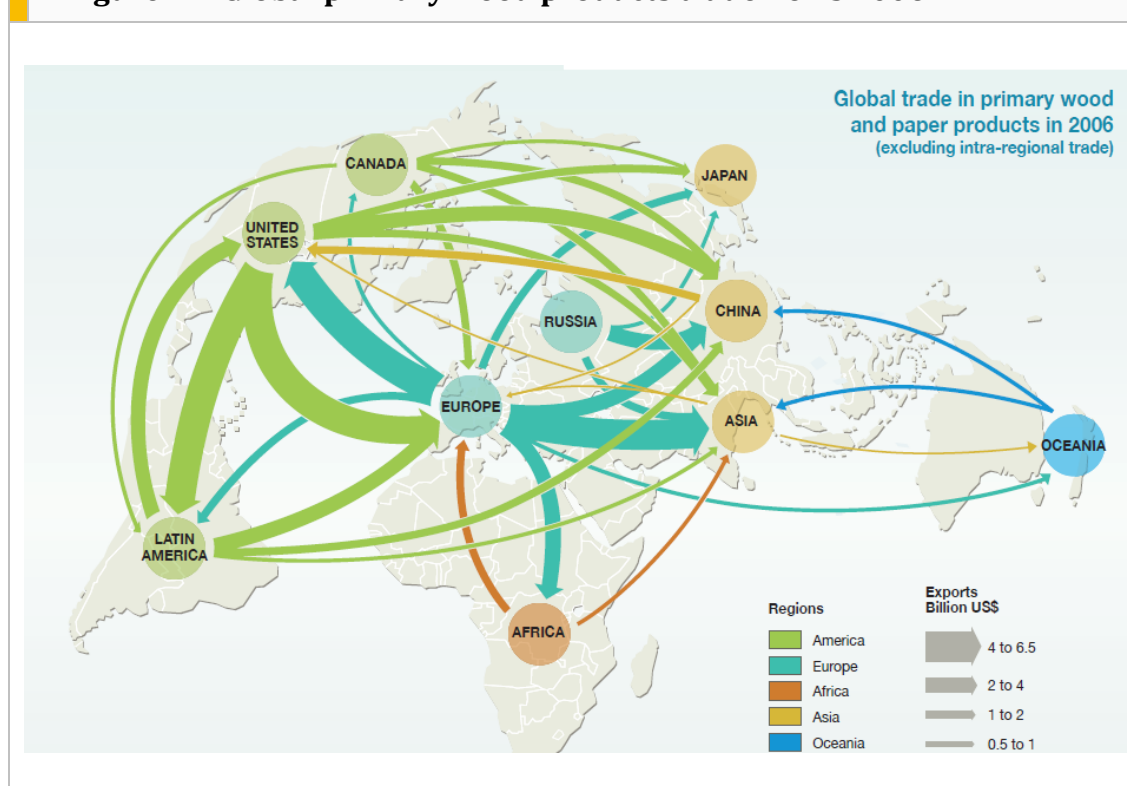
At the same time, the markets for wood products have become more and more global, increasingly resembling commodity markets similar to those for agricultural products or fossil fuels. Traditional wood products (pulp, paper, lumber and panels) have been joined by wood pellets and wood chips for energy.

Besides international trade with forest based commodities, local markets are significant outlets for forest products, i.e. for fuel wood, charcoal and construction timber. Whereas international value chains are dominated by large industrial players, these local markets (in tropical countries) are characterized by informal micro, small and medium sized enterprises, and local communities and household activities.

The major importers and processors of forest products are located in North America, Europe and Asia (i.e. China and Japan) (Figure 4). International trade with primary wood products is dominated by:

- the transatlantic trade between North America and Europe
- the trade flows from North to South America and vice versa
- the trade flows from Europe and North America to Asia

Figure 14: Global primary wood products trade flows 2006

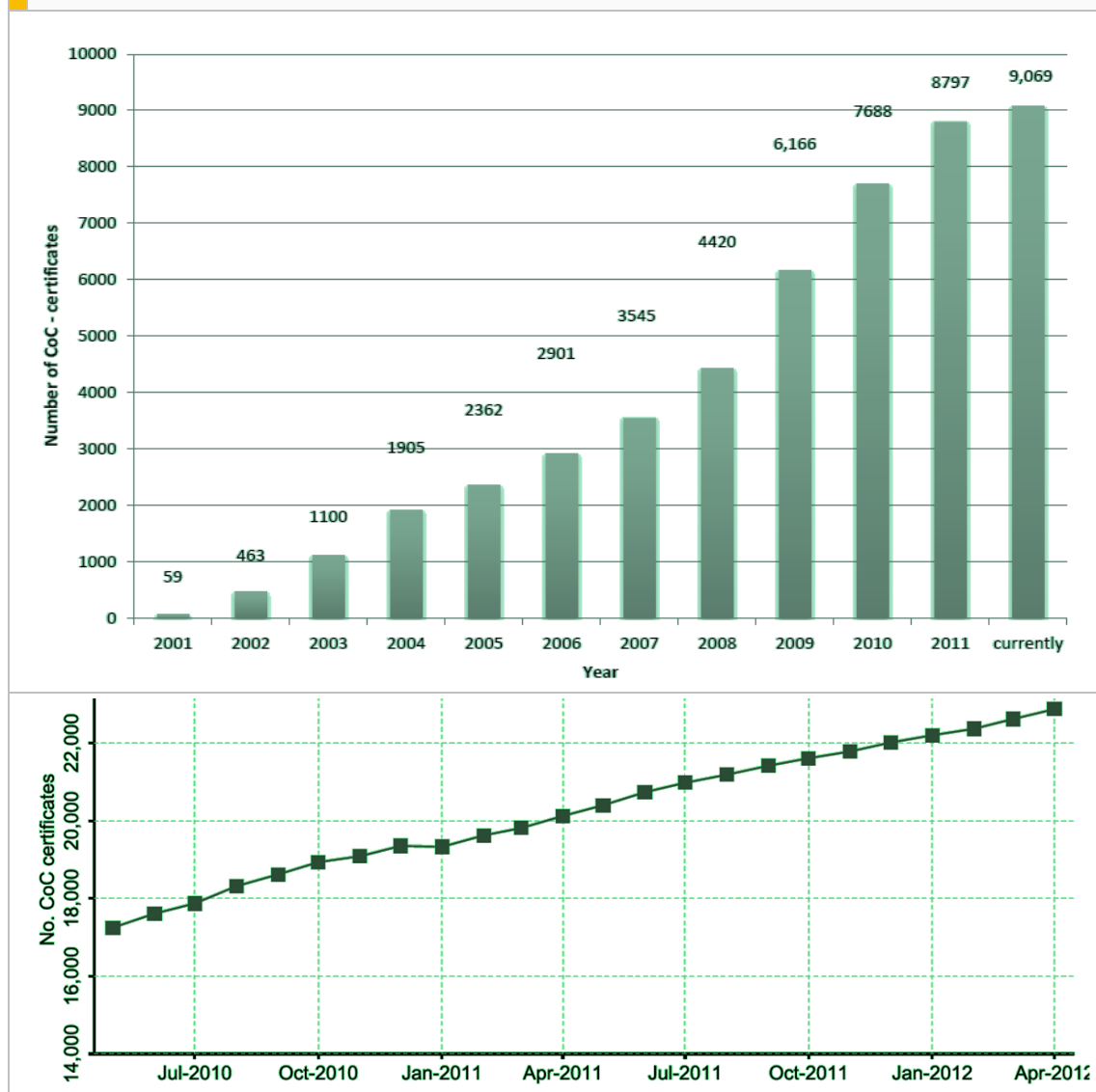


Source: UNEP, 2009

International trade with forest products from tropical countries has been subject to intensified political attention with the aim to combat illegal logging and enhance sustainable management of forests. Illegal logging accounts for 50–90 % of the volume of all forestry in key producer tropical countries and 15–30 % globally. Illegal logging is often identified as a main driver of deforestation and forest degradation (Dieter and Küpker, 2006). Of these illegally sourced volumes, an unknown percentage of quality wood products are exported to the wood processing hotspots in Asia, Europe and North America. Estimates for Germany indicate that roughly 1-2% (= 1 million m³) of direct timber imports from tropical countries origin from illegal sources. However, this estimate excludes indirect imports of processed wood products (e.g. furniture from Asia) and imports from Eastern Europe and Russia (Dieter and Küpker, 2006).

Regulatory measures at international policy level, such as FLEGT, have started to address this problem by focusing on building partnerships with producing countries and improving good governance. Voluntary certification schemes support have reached high levels of acceptance in the Western markets and induce positive pressure along value chains to improve sustainable forest management (Figure 5). The total number of FSC and PEFC CoC certificates in 2012 was more than 32,700. However, in Asian timber processing countries (i.e. India, China, Malaysia, Vietnam), such initiatives are not yet common.

Figure 15: FSC and PEFC Chain of Custody certificates worldwide



Source: Official information by PEFC (top) and FSC (bottom) in December 2012

5.3 Private forestry sector characteristics

Forest based activities are important sources of income and employment, i.e. in rural areas of developing countries. According to FAO figures, more than 10 million are employed in the forest industries worldwide; most of them in the wood processing hot spots of Asia, where more than 8 million people depend on wood production and processing.

In Africa, where only 10% of the wood extraction is round wood and 90% is fuel-wood, more than 570,000 are employed in the sector. This is more than in North America or South America and still roughly half of those working in the European forestry sector. This comparatively huge number indicates the low level of industrialization and the high demand for man power behind wood production and processing in Africa. Employment in the sector is characterized by chain-saw sawing and small scale charcoal production and trade. The sectors are not regulated and corruption and illegal activities constitute elements of these chains. There is a huge number of actors and intermediaries engaged in such value chains, resulting in low value adding opportunities for the individual.

Besides individuals, producer associations (e.g. of small scale sawyers or charcoal producers) and communities (e.g. community based forest enterprises) are important private players. These structures have increasingly been subject to international sector promotion programs and official development aid (see Molnar et al, 2007). Collective structures offer higher value adding opportunities and provide better entry points for enhancing sustainable management of forests and good governance.

Figure 16: Employment in the forestry sector 2005

Region	Data availability				Number employed (thousand FTE)		
	Primary production of goods		Management of protected areas		Primary production of goods	Management of protected areas	Total
	Number of countries	% of forest area	Number of countries	% of forest area			
Africa	34	52	20	25	573	13	586
Asia	31	83	19	73	8 232	179	8 411
Europe	35	99	20	91	1 113	126	1 239
North and Central America	16	89	8	43	354	16	370
Oceania	6	98	3	4	27	2	28
South America	10	84	6	75	239	3	242
World	132	84	76	61	10 537	338	10 876

Source: FAO, 2012

Relating the employment figures to the value adding performance of solid wood processing sectors per region reveals that the highest value added per employee is achieved in Europe, followed by North America. Lowest value adding is found in Asia and Africa. However in relative figures, forestry sector contribution to the GDP is of higher importance in Africa and Asia than in the industrialized regions.

Figure 17: Gross value added along the forest based value chain 2005

Region	Roundwood production (US\$ billion)		Wood processing (US\$ billion)		Pulp and paper (US\$ billion)		Total (US\$ billion)		Contribution to GDP (%)	
	1990	2006	1990	2006	1990	2006	1990	2006	1990	2006
Africa	6	9	2	2	3	3	11	14	1.7	1.3
Asia and the Pacific	29	33	21	30	40	56	90	119	1.4	1.0
Europe	27	25	57	57	74	60	159	142	1.4	1.0
Latin America and the Caribbean	13	21	6	7	11	12	30	40	2.0	1.9
North America	21	27	35	53	73	67	129	147	1.4	1.0
Western and Central Asia	2	2	1	1	2	2	5	5	0.5	0.3
World	98	118	123	150	202	201	424	468	1.4	1.0

Source: FAO, 2009

Due to its mainly informal character, no systematic value adding statistics exist on wood based energy in developing countries. However, case studies indicate the high importance of these sectors to the local economies (World Bank, 2011). For example, the charcoal sector for Dar-es-Salaam in Tanzania is estimated to provide labor and cash income for several hundred thousand people. For Ghana, it is estimated that the charcoal sector employs 3 million people. In Rwanda, the charcoal sector is estimated to account for an annual volume of USD 77 million, while in Kenya, total income from charcoal is estimated at USD 450 million, equal to the country's tea industry.

5.4 Private sector investment in REDD+ related value chains

Assessing REDD+ related investment options requires a consideration of opportunity costs, policy incentives and additional ecological and social benefits. Private investments in timber value chains can contribute to REDD+ either because:

- it increases the returns to forestry, thereby lowering the opportunity costs of alternative land uses;
- supporting investments in best forestry practices increase the visibility of, and thereby the demand for, responsibly sourced timber.

On a first glance, the opportunity costs for sustainable forestry are often low compared to agriculture as recently determined in a REDD+ opportunity cost study conducted in Tanzania (Merger et al. 2012). However, opportunity costs can also be high (up to USD 20/tCO₂) when degraded forests are converted into palm oil plantations (Olson and Bishop 2009). Integrating investments in forest-related value chains can increase the opportunity costs of sustainable forestry. Thus, sustainable management of forests and REDD+ can be enforced through value chain investments that correlate positively with economic and social development benefits. The following table 4 provides a systematic overview of possible value chain investment that can contribute to REDD+.

Table 4: Value chain investment options contributing to REDD+

Value chain type	REDD+ potential and underlying drivers	Demand and supply side approaches	Challenges and opportunities for private sector involvement
Local fuel-wood	High potential; major driver of forest degradation Drivers: Local energy demand: cooking and heating	Demand driver: Improved stoves, health and energy efficiency policies Supply driver: Sustainable fuel-wood regimes in natural forests and fuel-wood plantations	Challenges: Difficult due to low value adding, Purchase power of market is low. Limited investment but strong adoption incentive mechanism required Private actors difficult to mobilize Opportunities: Huge market volume Potentially high carbon credit revenues
Local charcoal	High potential; major driver of forest degradation Drivers: Urban energy demand: cooking and heating, SMFEs, industries	Demand driver: Requires strong involvement of the energy sector Improvement of urban energy grids Fuel switch to electricity Supply driver: Support for sustainable charcoal regimes in natural forests and fuel-wood plantations Formalization and good governance of the sector Improved efficient charcoal kiln technologies	Challenges: Solutions eventually exclude small scale forestry actors Highly informal and corrupt sector Difficult to mobilize private actors Low equity capital Opportunities: Value adding options are good Huge market potential Potentially high carbon credit revenues Potential for combined CDM projects
Local timber	High potential; strong impact on forest production potential (opportunity costs) Drivers: Construction sector; national urban demand	Demand driver: Public procurement policies favoring sustainable products Support to domestic products providing local employment Supply driver: Formalization of small scale sector; Forming producer associations technical improvement/efficiency, and quality improvement of products pooled investments in machinery and equipment, enhancing good governance structures	Challenges: Private actors difficult to mobilize High informality and corruption Opportunities: Medium value adding opportunities Potential to substantially promote and modernize forestry sector High potential for formal employment generation and positive effects on contribution to national tax revenues
International solid wood products	Medium to high potential, where forest management is not in compliance with sustainable production standards Drivers:	Demand driver: Further implementing FLEGT, Lacey Act, a.o. Procurement policies in consumer countries favoring sustainable, climate friendly wood products Supply driver: Good governance and law en-	Challenges: Comparatively low carbon credit revenues Additionality problem Opportunities: High value adding Private actors used to professional

Table 4: Value chain investment options contributing to REDD+

Value chain type	REDD+ potential and underlying drivers	Demand and supply side approaches	Challenges and opportunities for private sector involvement
	Global demand for sawn wood and panels	forcement, Introducing co-certification (e.g. FSC and VCS)	business models Equity capital available. Affects large areas of concessions
International pulp and paper products	Low potential; only in few regions where pulp plantations contribute to the conversion of natural forest Drivers: Global demand for pulp and paper products	Demand driver: FLEGT, Lacey Act and similar national policies Procurement policies in consumer countries favoring sustainable, climate friendly wood products Supply driver: Improving forest governance and law enforcement, Introducing co-certification (e.g. FSC and VCS)	Challenges: Comparatively low carbon credit revenues Opportunities: High value adding

Source: UNIQUE forestry and land use

Investments in local value chains

The first three value chain investments apply to timber and wood products circulating on domestic and regional markets. In order to invest in these value chains and make responsible forestry practices more competitive, national programs for sector formalization, technical capacity building and forest governance improvements are required. We believe such measures can help foster private forestry sector investment in REDD+ related activities in the future.

Sector formalization can improve legal security regarding investments and property, especially increasing the attractiveness for investments by SMFEs. Studies on informal SMFEs suggest that in order to improve access to capital, entrepreneurs should be encouraged to form producer associations before accessing finance. This is because peer pressure reduces the risk of default and group loans reduce the transaction costs. Other common recommendations frequently suggested in the context of sector formalization include tax incentives encouraging extension services institutions to provide training to entrepreneurs on simple record keeping and managerial know-how; legislation defining what constitutes an SMFE and their legal as well as tax obligations in order to integrate a number of informal enterprises into the formal framework; steps to minimize the legal procedures involved in doing business in both countries; and technology transfer through simple, inexpensive and adaptable technology should be promoted to enhance the productivity of SMFEs.

Encouraging timber sector formalization can divert financial streams currently channeled into grey markets (corruption, non-taxed revenues) available for legal/formal economic transactions. Bank ratings for country specific investments in forestry sectors may also improve as a result of formalization efforts, allowing for interest rates for loans to decrease. Formalized enterprises / producer associations in developing countries will become better recognized by business global partners and enable eye-level value chain interaction.

Efforts to improve the governance structures surrounding domestic timber markets in REDD+ countries will allow for a wider range of private forest users to invest in responsible forestry practices. Once affordable and reliable MRV for forest degradation becomes available, this may allow for vast increases in the conservation and enhancement of forest carbon. Improved forest law enforcement through international initiatives such as the FLEGT Action Plan provides positive synergies in this context by making legally operating forestry enterprises more competitive. FLEGT VPAs in many partner countries also reinforce the formalization of the domestic timber sector.

Setting up national programs promoting company-community partnerships

An ITTO study conducted by Molar (2007) has compiled a broad information base on community based forest enterprises. One promising business model identified in this study was the company-community partnership model. Company agreements with low-income producers are a rapidly growing, largely in response to the growing scarcity of blocks of land for plantations. Agreements included simple purchase contracts, as well as contracts to supply everything from venture and working capital, technical assistance and inputs, and equipment rental or purchase. Out grower schemes are a special type of this model. In South Africa for example, 18,000 smallholders engaged in company agreements for plantation outgrowing and at least another 5,000 smallholders financed their own commercial plantations and harvest with no relationship with companies or formal finance.

Facilitating program support to further promote community-company partnership schemes could include:

- Provision of low interest loans for communities to enter partnership agreements/investment at larger scale and enhance ownership and financial returns.
- Provide loans to producers and processors associations, e.g. for investments in technical equipment and machinery pools to improve harvesting and processing efficiency (Approach requires flanking sustainable forests management training).

Providing improved financial and technical capacity to community based enterprise increases, which directly induce employment and income generation, increases real and perceived forest value and opportunity costs, which in turn reduces attractiveness of forest conversion to other land uses.

Implementing national public procurement in developing countries preferring nationally produced wood products

Functioning sustainable public procurement schemes, considering wood products, could significantly enhance sustainable management of forests in developing countries, i.e. when public procurement prefers locally produced products against imported products from frequently doubtful sources (as commonly practiced in most developing countries). Such efforts also contribute to modernization of the forestry sector, value adding and employment generation.

Sustainable Public Procurement implementation in developing countries is promoted under the Marrakesh process, a voluntary initiative led by governments⁹, but only a small number of countries participate in pilot programs. A number of public procurement reform programs have been implemented in developing countries, but the effectiveness remains unclear because often the technical capacity to implement the policies is lacking.

Box 4 below demonstrates how public procurement policies requiring legal or sustainable timber can catalyze private sector engagement in more responsible forestry practices.

Box 4: Minimum standards for public timber procurement

The Ugandan Government in 2004 specified in a large school furniture procurement process, funded by the Netherlands, that *Milicia excelsa* a tropical hard wood, which is also on the IUCN Red List of Threatened Species, has to be used. Realizing the potential negative impact of this tender the Dutch Embassy requested a chain of custody audit to ensure that the timber is at least from a legal source since FSC or any other certified *Milicia excelsa* timber was not available.

Procurement guidelines today still often do not require any proof of timber origin. The availability of more cost effective plantation timber and knowledge about the suitability of certain timber species for specific applications can also reduce the extraction pressure of rare and unsustainably produced timber species.

Source: UNIQUE forestry and land use

REDD+ relevant initiatives include support in:

- financing the process of formulation and standardization of national level procurement strategies, developing wood products control and tracing systems. Wherever possible, such efforts should build on synergies with FLEGT related Legality Assurance Systems in VPA countries should be sought.
- Activities could also include the promotion of sustainably woody biomass as energy source (comparably to the German “EEG”). Large scale biomass user, such as agribusinesses, could be forced to demonstrate that they meet their demand from sustainable sources.

These activities could significantly contribute to domestic sector formalization, pushing demand-side pressure for legal wood production and eventually contributing to more sustainable forest practices in many tropical forest countries. Furthermore, the increased use of sustainably produced wood products contributes to improvement of the national GHG balance at a much wider scope and could trigger change from non-renewable resources to renewable (solid and fuel).

International value chains - FSC and carbon certification of internationally traded wood products

International regulative (e.g. FLEGT) and voluntary (e.g. FSC, PEFC) approaches to enhance sustainable management of forests and provide platforms to integrate carbon monitoring and forest monitoring system which will create synergies and reduce costs. FSC is currently working on

⁹ <http://www.unep.org/resourceefficiency/Portals/24147/scp/marrakech/taskforces/pdf/Procurement2.pdf>

a system to integrate carbon stock management into its certification principles. FLEGT VPAs between the EU and timber producing tropical countries comprise the establishment of Legality Assurance Systems that ensure legality of timber production and make timber trade in and between countries traceable. These systems also provide entry points to combine certification schemes with national or project level MRV.

Concrete approaches could comprise:

- Supporting internationally acknowledge certification schemes to develop carbon accounting methodologies in their systems.
- Directly support pilot projects combining sustainable forest management certification with active carbon stock management and develop feasible business models.

A REDD+ - FSC combined business model is presented in the table below. Similar examples exist in Brazil (the Florestal Santa Maria Project and the CIKEL Brazilian Amazon REDD APD Project) and Peru (see also table in Annex).

Box 5: Example of a REDD+ relevant business model

Since 2004 the Mpingo Conservation & Development Initiative (MCDI) has been developing an approach to PFM which focuses specifically on sustainable management of high-value hardwood timbers, working in the Miombo woodlands on communal village lands in Kilwa District, Lindi Region. MCDI focuses on sustainable utilization of a flagship species, East African Blackwood (*Dalbergia melanoxylon*, locally known as Mpingo), which is used in Europe and North America to make musical instruments. MCDI has identified a niche market prepared to pay a significant premium for products that are made from timber which is demonstrably legal, sustainably produced and fairly traded. MCDI has pioneered a new method for inventorying timber stocks which is participatory, efficient, and scientifically robust, and MCDI is now recognized as one of the leading implementers of PFM in the country. In March 2009 MCDI was awarded the first certificate by the FSC for community-managed natural forest in the African continent, and carried out the first commercial timber harvest from a PFM forest in Tanzania in November 2009.

MCDI projects show that community income per hectare of forest could reach USD 14 per year, with some villages potentially earning annual sums in excess of USD 100,000. However, as of beginning 2010, MCDI is only active in six villages in Kilwa District, with only 2,420 ha of forest thus far certified. In order to achieve the necessary economies of scale to reach financial self-sufficiency with its FSC certification scheme, MCDI needs to expand to 10+ villages and at least 100,000ha of forest under community management.

In December 2009 MCDI was given a grant of USD 1.95M from the Royal Norwegian Embassy (RNE) in Tanzania to develop a project combining FSC certification with access to the carbon markets through REDD. MCDI proposed to leverage the carbon value of the forests it is helping put under community management to cover the transaction costs of expanding its FSC certificate scheme into new villages and new areas of forest thus addressing challenge (b). By covering the transaction costs of expanding PFM into new areas, REDD+ will be acting as an enabler or catalyst for more PFM, which, when complete, will in turn generate further REDD+ payments, leading to more PFM, and so on. The goal is a combined certification scheme which utilises REDD+ methodologies to catalyse expansion of PFM across the Miombo woodlands of south-eastern Tanzania.

Source: MCDI project document

6 Conclusions and Way Forward

While a number of development institutions and foundations, as well as social and wildlife conservation entrepreneurs have developed REDD+ projects for the voluntary carbon market, surprisingly few established forestry enterprises have shown interest in REDD+. Without the engagement of the forestry sector and related value chain expertise, private long-term finance for REDD+ implementation may not become available at the scale required. The private forestry sector and policy-makers must recognize the potential of investments in the sustainable management of forests in the context of REDD+. Carbon credits can be a temporary source of short-term finance, but the proceeds from carbon credits have to be invested in alternative nondestructive forest-related income sources, such as sustainable forestry activities.

Public co-investments in REDD+ can support private sector investment in the sustainable management of the remaining natural and degraded forests by reducing the risk of investments and structuring incentives. In the following, we have identified investment priority actions that address both the supply and demand side aspects of private sector investments that contribute to REDD+ implementation. We recommend prioritizing investment support in degraded forests and semi-natural production forests that have the biggest potential to meet the increased timber and fuel-wood demand without compromising food security and biodiversity. Such investments will also increase the opportunity costs of forestry against other land uses and maintain and enhance the carbon stocks of forests.

Locally managed SMFEs are a preferred target group and investments targeting this group provide significant transformative potential. However, SFMEs are often unorganized and existing forest producer associations too weak to absorb and productively use additional investments. Therefore, company-community partnership models are considered often to be the most suitable implementation mechanism for integrating SMFEs into REDD+. The aim is to promote sustainable business models for forest owners and concession holders to engage with local forest enterprises in sustainable management of forest and efficient timber production in an entrepreneurial way. Locally owned forest enterprises require capacity building support to strengthen expertise and confidence as well as support for the establishment of forest producer associations to minimize transaction costs related to investments and to reach economy of scale which is crucial in particular for harvesting and processing. Companies that are already FSC certified or comply with FSC standards and respective management principles would be the preferred partner to work with SMFEs or SMFE associations in order to build local capacity for sustainable management of forests and add value to local timber supply chains. A national company-community partnership program would support FSC certified/conform forestry production and value adding in building business partnerships with neighboring forested communities.

In countries where both REDD+ and FLEGT are operating, synergies between the two programs should be sought. Assessing investment options in sustainable forestry and REDD+ activities requires a consideration of opportunity costs, policy incentives and additional ecological and social benefits. By requiring forest operators to verify legal compliance, FLEGT seeks to ensure transparent compensation procedures including integrated assessment of the economic, social and environmental costs, as most forest laws today include such provisions. However, the FLEGT mandate does not reach other sectors that currently pose the greatest threat to forests, such as

mining and agro industries. This is where REDD+ can ensure the national FLEGT program is compatible with sustainability objectives at the landscape level. For example, REDD+ should not allow the wood sourced from plantations to be legally exported under the FLEGT program if the plantation has replaced natural forest.

REDD+ funds leveraging local and international pension and institutional investors that require low risk and low returns offer a promising financing vehicle. Supporting pilot countries and partners to design investment-ready project clusters at landscape level and well-integrated into promising forest value chains in a number of pilot countries would be required to develop an investment pipeline for domestic and international institutional investors. Subsequently, awareness-raising among institutional investors combined with risk management tools, e.g. through guarantees of first loss facilities, are key to mobilize capital. Significant private investments in forestry already exist. From the different sources of finance, institutional investors and investments by local forest rights holder should be jointly targeted. The former requires long-term – low risk-low yielding – investment opportunities, which can be well-aligned with forestry investment. In a number of developing countries, sustainable investment opportunities of pension and insurance contributions are rare. Stimulating forestry investments would also provide significant rural development dividends for these developing countries, which is an additional incentive for government-run pension and insurance funds to enable and support forestry investments. Investments by local forest rights holder are already significant and should receive additional attention given local ownership and responsibility aspects by strengthening domestic FLEGT, forest management capacity and access to affordable finance. We recommend prioritizing investment support in degraded forests and semi-natural production forests that have the biggest potential to meet sustainably the increased timber and fuel-wood demand without compromising food security. Restoring the value of degraded forests can also reduce the economic pressure (opportunity costs) to convert these forests into agricultural land use.

Forest sector governance improvements at the national level are required to attract investors in the sustainable management of forests and thus increase the opportunity costs of responsible forestry against other land uses. Investments in sustainable management of forests require a transparent forest sector where sustainably, or at least legally, produced timber is competitive. If successful in achieving its stated goals, a timely strategy for reducing risks and improving the investment climate for sustainable forestry is supporting the implementation of the EU's FLEGT Action Plan. However, FLEGT is limited in its scope and many countries which offer investment potential for public co-investments in REDD+ are currently not included in the EU's FLEGT Program. Low profit margins due to competition from illegal timber and corruption pose significant barriers to scaling investments in sustainable forestry, which can be reduced by successfully implementing FLEGT VPAs.

FLEGT-related measures provide the enabling framework for private investments in sustainable forestry, but many countries have other national or regional measures that render their forestry sectors favorable to investment in sustainable management of forests. For example, law enforcement on the domestic market has made sustainably harvested timber competitive with local market prices in some developing countries. In order to increase the impact of FLEGT and related measures, the authors propose developing an 'Ease of Doing Forestry Business' Index. This transparency tool will motivate countries to improve law enforcement and accountability in

the forest sector and boost their country's international reputation. This will support private enterprises or institutions seeking forests or forestry sectors to invest in, but are faced with the prohibitive risks.

The increased transparency would shed light on both governments and private actors operating in tropical forest countries, potentially sparking improvements in forest governance and related private sector support as well as forestry management practices. The private sector operating in the countries being assessed by this tool will also be motivated to improve their sustainability practices in order to avoid reputational harm. The 'Ease of Doing Forestry Business' Index would be developed for public and private investments alike, and would be able to differentiate between large and small private forestry operators, i.e. SMFEs. The index could be established by private sector forestry associations, similar to the commodity round tables in the agricultural sector or together with organizations such as ITTO.

As laid out in Chapter 5.2, the demand for timber and related products is expected to increase in the next decades, especially the local demand in REDD+ partner countries. In order for the private forestry sector to be encouraged to invest in sustainable forestry practices, the demand for sustainably produced timber and wood products must increase. Awareness-raising for consumers in these markets and the implementation of public procurement policies will help ensure that the demand for sustainably produced products continues to grow. Therefore, the existence of public procurement policies and other demand-side measures are important criteria for countries to score positively on this index.

'Ease of Doing Forestry Business' Index. A timely strategy for reducing risks and improving the investment climate for sustainable forestry is supporting the implementation of the European Union's FLEGT Action Plan. Low profit margins due to competition from illegal timber and corruption pose significant barriers to scaling investments in sustainable forestry, which can be reduced by successfully implementing FLEGT VPAs. However, seeing as the scope of FLEGT is limited in geographic terms, we provide an investment matrix for analyzing the countries where these investments offer the greatest chance of success. The matrix relies on existing indexes or information regarding national land use strategies. The ranking on the World Bank's Ease of Doing Business Index (upper 2/3) and the existence of national REDD+ program (either accepted R-PP or UN-REDD National Document) or climate smart agriculture (CSA) programs are considered the enabling conditions that are the prerequisites for a country to have sufficient investment potential. The countries that meet both of these criteria are shown in the upper right hand quadrant. Within this quadrant, countries have been further categorized according to certain supporting conditions, which are criteria that the authors expect will increase the success of the investment. These criteria include the prevalence of FSC or food production certifications as well as the World Bank's Good Governance Indicator, but other criteria can be chosen depending on the objective of the investment. Additional options for these criteria include the existence and strength of regional initiatives or institutions that support REDD+, such as ASEAN (Associations of Southeast Asian Nations) or COMIFAC (Commission des Forêts d'Afrique Centrale) in Central Africa; a supportive decentralization framework (a sub-category of Good Governance Indicator); effective institutions for aggregating smallholders; the development or implementation of multi-sectoral land use plan; or Transparency International's Corruption Perception Index. Annex 1 provides the background and methodology for how this matrix was constructed.

Figure 18: Matrix highlighting enabling framework at national level for landscape investment packages supporting private sector investments

World Bank's Doing Business Index	Ranked upper 2/3	El Salvador Uganda Kenya Paraguay	FSC Concessions /Certified Food Production	Vietnam Nicaragua	Peru Mexico Colombia Costa Rica
				Nepal	Ghana
				Good Governance Indicator ¹⁰	
	Ranked lower 1/3	Bolivia Honduras Madagascar Suriname	Indonesia (REDD+ and CSA) Laos (REDD+) Brazil (REDD+ and CSA) Ecuador (REDD+) DR Congo (REDD+) Cameroon (REDD+) Ethiopia (REDD+ and CSA) Tanzania (REDD+)		
	Less Advanced REDD+ Process ¹¹ / No CSA ¹² National Program		Advanced REDD+ / CSA National Program		

¹⁰ The [Good Governance Indicator](#) assesses (1) Voice and accountability; (2) Political Stability/Absence of Violence; (3) Government Effectiveness; (4) Regulatory Quality; (5) Rule of Law; and (6) Control of Corruption in a percentile rank (0-100). Any country with more indicators ranked above 50% is placed on the higher end of the matrix.

¹¹ A country is considered advanced in its national REDD+ Process if (a) its R-PP has been accepted by the FCPF; (b) has developed a National Programme through UN-REDD Programme; (c) or has a national REDD+ strategy as in the case of Brazil.

¹² *Climate Smart Agriculture (CSA)*

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Annexes

Annex 1: Ease of Doing Business Ranking

The cut-off for countries to score positively on the “Ease of Doing Business Ranking” is higher than 2/3, meaning any country scoring below 123 is listed in the upper row of the matrix.

The REDD+ process was assessed according to whether a country’s R-PP was accepted by FCPF or the country developed a National Programme through the UN-REDD Programme. In certain cases, exceptions were made, such as the case of Brazil, which is not participating in these programs but has a national REDD+ strategy. The existences of Climate-Smart Agriculture (CSA) or similar national programs that are considered relevant for the purposes of this matrix were assessed according to the author’s knowledge and awareness. Therefore, the results of this matrix should not be considered final and rather serve to give an idea for the types of criteria and corresponding countries are considered potentially good candidates for landscape investment packages.

Figure 2: Enabling Environment Criteria

	Ease of Doing Business	REDD+ Process ¹³ / CSA
Vietnam	99	
Indonesia	128	
Laos	163	
Nepal	108	
Bolivia	155	
Colombia	45	
Brazil	130	
El Salvador	113	
Honduras	125	
Nicaragua	119	
Ecuador	139	
Peru	43	
Mexico	48	
DR Congo	181	
Ghana	64	
Madagascar	142	
Uganda	120	
Cameroon	161	
Ethiopia	127	
Kenya	121	
Tanzania	134	
Paraguay	103	
Suriname	164	
Costa Rica	110	

Source: <http://www.doingbusiness.org/rankings>; <http://www.forestcarbonpartnership.org>;
<http://www.un-redd.org> (accessed 29.01.2013).

¹³ Acceptance of R-PP by FCPF, National Programme by UN-REDD or other national REDD+ strategy such as the case of Brazil

Annex 2: REDD+ Projects

Table #: REDD+ projects reviewed

Project name	Kasigau Corridor REDD Project – Phase I Rukinga Sanctuary and Phase 2 – Community Ranches	Budongo-Bugoma Landscape REDD+ Project	Kariba REDD+ Project	Florestal Santa Maria Project (FSM-REDD Projects)	The CIKEL Brazilian Amazon REDD APD Project
Location	Kenya	Uganda	Zimbabwe	Brazil	Brazil
Area	Phase 1: 30,200 ha Phase 2: 170,000 ha	120,000 ha	785,000 ha	71,700 ha	27,400 ha
Implementing organizations	Wildlife Works	Jane Goodall Institute, Katoomba Group Wildlife Conservation Society, Nature Harness Initiative	Carbon Green Investments Guernsey (CGI) and Southpole Carbon Asset Management (development services)	PLANT Environmental Intelligence (Technical partner), VO2 Desenvolvimento Empresarial (general coordination)	CKBV Florestal Ltda (Brazilian private and family company) supported by 33 forest Capital (financial and technical partner) and TerraCarbon LLC (carbon consultancy)
Land ownership	Phase 1: Private owner of a leasing agreement by 2038 Phase 2: 13 Community group owned ranches	Under customary tenure (open access)	Community owned land	Private rural property	Private ownership

Drivers of deforestation and forest degradation	Illegal charcoal trade, first element of degradation and subsequent clearance of the land for subsistence farming.	Land tenure insecurity Mainly conversion to small- and medium-sized agriculture for commercial production (sugarcane) and small-scale subsistence farming Degradation due to unsustainable harvesting for timber	Subsistence farming (cotton, tobacco) Fuel-wood for household consumption and for tobacco curing process	Logging as a source of income for further conversion to agricultural land for pasture and coffee cultivation in Mato Grosso	Planned deforestation activities by the project owner for pasture management
Strategies to address drivers of deforestation and forest degradation	Clarification of land tenure ceased immigration to project area Construction of a ethical clothing factory providing employment Establishment of nurseries for reforestation and forest management plan development	1: Support acquiring land titles for forest owners, community forests and communal associations 2: Direct carbon payments 3: Support improved agricultural practices to increase production on existing land 3: Woodlot establishment, agroforestry and forest-based enterprises	1: Improvement of agricultural productivity through provision of inputs and equipment, maintenance and training of local farmers 2: Establishment of fast-growing fuel-wood plantations (Eucalyptus), Moringa for nutritional purposes and Jatropha for fencing and soap making 3: Fire management and beekeeping	Community forest management and FSC certification; Protection of the property from invasion by land grabbers. Incentive creation to recover degraded areas surrounding the property	Low Impact Logging (SFMLIL) practices in a 35 years cycle
Safeguards	CCBA	CCBA	CCBA	FSC	FSC
Financing mechanisms	Carbon credit sales	Jane Godall Institute provide the key finance, supported by American Electric Power (in return carbon credits for offsetting) Sub-grant secured from Global Environmental Facility	Private carbon investor finances the project and provides all required finance to the project. In return, carbon credits will be monetized Benefit sharing: 20% of net profits will locally invested	Sustainable management of forest timber revenues (IRR: 5 % and sales of VERs to multinational companies (IRR 9.6 %))	Sustainable revenues from low impact logging and sales of VERs

Table #: REDD+ projects

Project name	Madre de Dios Amazon REDD Project	REDD in Community Forests – Oddar Meanchey	The Rimba Raya Biodiversity Reserve Project	The Choco-Darien Conservation Corridor REDD Project	The Mai Ndombe REDD+ project
Location	Peru	Cambodia	Indonesia	Colombia	Democratic Republic of the Congo (DRC)
Area	99,000 ha	64,400 ha	91,200 ha	13,500 ha	
Implementing organizations	Maderacre & Maderyja forest companies; BOSQUES AMAZONICOS SAC (BAM) (technical development)	Forestry Administration of the Royal Government of Cambodia supported by Pact, supported by national and international NGOs and Terra global Capital	PT Rimba Raya Conservation, Orangutan Foundation International, supported by Infinite Earth Ltd. (carbon firm)	Anthroctect, a Colombian organization (owner), Implementation by Cocomasur and Fund for Environmental Action and ecoPartners, Carnegie Institution for Science (technical)	Era Ecosystems and Wildlife Works and technical carbon component supported by ecoPartners
Land ownership	Two private companies with forest concessions	Community owned land, endorsed by the Government of Cambodia	Ecosystem protection concession approved by the government (changed from a palm oil concession area)	Owned by Cocomasur (The Council of Black Afro-Colombian Communities of the Tolo River Basin and Southern Coastal Zone (community owned)	Two timber concessions were suspended for the REDD project, and given to ERA Ecosystems as a conservation concession (Avoided planned deforestation)
Drivers of deforestation and forest degradation	Population growth due to a new road (including agricultural and pasture land expansion)	Agricultural expansion, settlement expansion, forest fire, illegal logging, timber harvesting, and fuelwood collection	Forest fire for agricultural expansion (palm oil) (avoided planned deforestation)	Cattle ranching, selective logging and subsistence and small-scale agricultural expansion	Commercial logging by logging industry and conversion of degraded forests to agriculture of small-holders
Strategies to address drivers of deforestation and forest degradation	Sustainable production of forest products in a cutting cycle of 20 years	Community forest protection group formation for forest conservation; Strengthening land tenure and land use plans development, sustainable farming systems, agricultural intensification, fuel efficient stoves,	Obtaining and holding legal land tenure rights; Community-based protection of forest areas and alternative livelihoods, fire management, environmental education	Conservation; building governance capacity; Improved enforcement and management, Economic alternatives through improved agricultural and silvopastoral practices	Participatory community-based conservation initiatives Agricultural diversification, and market access, village centered capacity building; infrastructure and socio-economic development activities

Safeguards	CCBA, FSC	CCBA	CCBA	CCBA	CCBA
Financing mechanisms	Greenox Consulting (NGO) owner of 30 % of credits and responsible for carbon sales Sustainable timber revenues streams Pre-finance from equity and international cooperation	Sales of carbon credits and additional revenues from livelihood programmes. The project is part of the newly created Terra Bella Fund	Forward purchase of carbon credits, and international donor support	Sales of carbon credits and alternative community income streams Pre-finance by project owner Anthroprotect	Sales of carbon credits and pre-finance by carbon investor ERA Ecosystems and Wildlife Works

