



Chapter 5

How do we match country needs with financing sources?

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5.1 The challenge: Effective mechanisms to respond to diverse circumstances

Reducing emissions from deforestation and forest degradation (REDD) is potentially a low-cost option for mitigating climate change, if acted upon today (Stern 2006). If forest carbon credits are included in global emissions trading, the estimated cost of halving net global carbon dioxide emissions from forests by 2030 is USD 17-33 billion annually (Eliasch 2008). The Thirteenth Conference of the Parties (COP 13) to the United Nations Framework Convention on Climate Change (UNFCCC) in 2007 laid the foundations for including REDD in developing countries in the post-2012 climate protection regime. Developed countries are encouraged to help find ways of financing these REDD activities in developing countries.

Developing countries differ in their capacity to reduce forest emissions. This is due to differing national circumstances as regards the drivers of deforestation and forest degradation, as well as different degrees of institutional capacity to monitor, influence and regulate these drivers.

Multiple sources of REDD finance are already available, or likely to become available. The amount and composition depends on the design of the REDD mechanism and will change over time. Currently, most REDD financing is earmarked for capacity building, or ‘readiness’ activities. Although the nature of the REDD mechanism is still under discussion, and the outcome will affect the financing needs and financial flows, we present a preliminary exploration of the potential financing streams for different country contexts and identify possible gaps in financing.

5.2 What are the financing needs?

Regardless of the final design of the REDD mechanism (Eliasch 2008, see Table 5.1) there are two basic needs for financing:

- ***Financing upfront capacity-building (readiness)***: Countries need to fulfil minimum readiness requirements, such as putting in place infrastructure for monitoring emissions reduction, clarifying land tenure and strengthening institutional capacities for law enforcement. One study estimates the costs of capacity building for 40 forest nations over a five-year period to be as much as USD 4 billion (Hoare *et al.* 2008). The amount and type of these costs will vary significantly between countries.
- ***Financing on-going emission reduction costs***: Costs are in two categories: forest protection costs and opportunity costs. The first refers to the costs of implementing the policies and measures (PAMs) inside and outside the forest sector that are needed to reduce forest emissions. Examples include forest monitoring, reforming tenure, law enforcement, taxation of forestland, restrictions on road building and agricultural zoning. Opportunity costs, the second category, arise from foregone profits from deforestation or the costs of adopting more sustainable forest use. These costs vary from place to place and time to time. Opportunity costs are higher where markets are accessible and where expanding forest protection (e.g. REDD) intensifies agriculture. Nevertheless, low opportunity costs do not necessarily imply that REDD activities will be low cost. REDD activities often take place in areas where there are the greatest challenges in forest policy, administration and monitoring (Eliasch 2008).

Table 5.1. Summary of REDD financing needs

	Upfront capacity building	Ongoing emissions reduction	
	Readiness costs	Forest protection costs	Opportunity costs
Objectives	Upfront investments in REDD infrastructure (monitoring systems, forest and carbon density data), and stakeholder participation	Cover the cost of implementing policies and measures (PAMs) that enable and promote REDD investments	Compensate for forgone profits from reducing forest emissions
Components	<ul style="list-style-type: none"> • Upfront financing • Little direct effect on land use emissions • Upfront transaction costs 	<ul style="list-style-type: none"> • Upfront financing • Costs and benefits depend on policy • Recurrent transaction costs 	<ul style="list-style-type: none"> • Continuous financing • Costs vary across space and time
Examples	<ul style="list-style-type: none"> • Set up monitoring system (USD 0.5-2 million, in India and Brazil)^a • Set up forest inventories (USD 50 million for 25 nations)^b • Capacity-building (USD 4 billion for 40 nations over 5 years)^a • Land tenure reform (size-dependent, USD\$ 4-20 million over 5 years for one country based on estimates from Rwanda, Ghana and Solomon Islands)^a 	<ul style="list-style-type: none"> • Recurrent costs of forest inventories (USD 7-17 million per year for 25 countries)^b • Monitoring legal compliance 	<ul style="list-style-type: none"> • Opportunity costs of halving deforestation (USD 7 billion annually over 30 years for eight countries)^c

^aHoare *et al.* 2008; ^bEliasch 2008; ^cGrieg-Gran 2008

5.3 The forest context affects financing needs

Pressures on forests vary across countries and regions, and over time. Human pressure on forests is shaped by, among other things, market access, the nature of forest use and security of tenure. Chomitz *et al.* (2006) have provided a stylised three-part typology of tropical forests: core areas beyond the agricultural frontier, forest edges and disputed areas, and forest-agricultural mosaic lands (Table 5.2). In essence, these forest types correspond to the three stages of the forest transition curve (Figure 5.1).

Table 5.2. Three stylised forest types.

	Forest cores beyond the agricultural frontier (~49% of tropical forests)	Forest edges and disputed areas (~37% of tropical forests)	Mosaic lands (~14% of tropical forests)
Features	<ul style="list-style-type: none"> • Remote from markets; low deforestation • Low population, but high proportion of indigenous and poor 	<ul style="list-style-type: none"> • Rapid agricultural expansion and high deforestation • Rapidly increasing land values (frontiers) • Forest use conflicts (disputed areas) 	<ul style="list-style-type: none"> • Depleted, fragmented forests; slower deforestation, but higher degradation • High land values and high population densities with a substantial portion of forest dwellers
Policy needs	<ul style="list-style-type: none"> • Protecting indigenous rights • Averting disorderly frontier expansion by equitably assigning rights • Regulated infrastructure expansion 	<ul style="list-style-type: none"> • Policing and law enforcement, e.g. to prevent resource grabs • Equitable settlement of claims • Control of road expansion 	<ul style="list-style-type: none"> • Enforcement of property rights over natural resources • Developing markets for environmental services • Reforming regulations to encourage forestry

Source: Chomitz *et al.* 2006

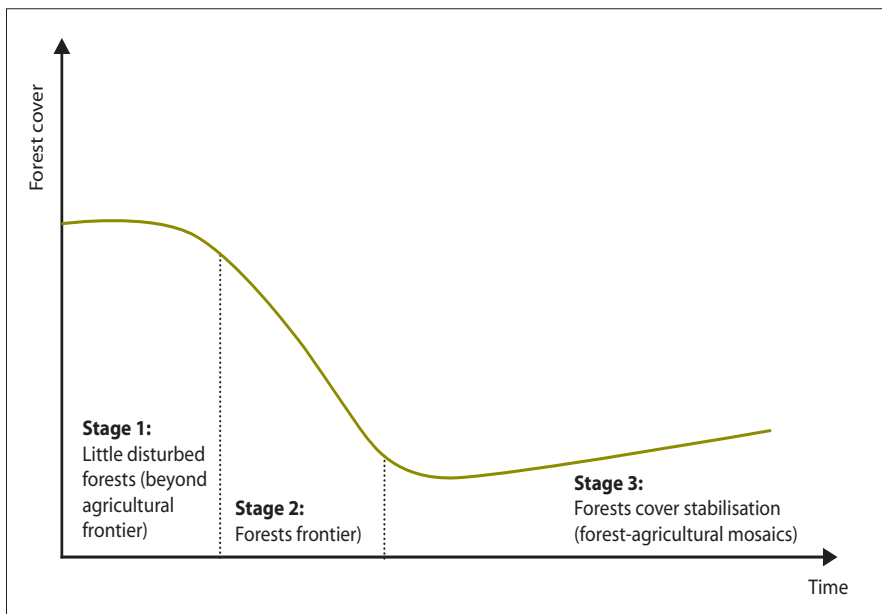


Figure 5.1. The forest transition curve

It is estimated that forest frontiers, where deforestation is concentrated, are currently distributed almost evenly across all regions (Figure 5.2). Different policies may be needed to address the governance challenges, and associated deforestation and degradation, in different forest types. For example, policies that will be important for improving forest management in forest mosaic lands – where degradation is concentrated – may include enforcing property rights and creating new markets for environmental services (Table 5.2).

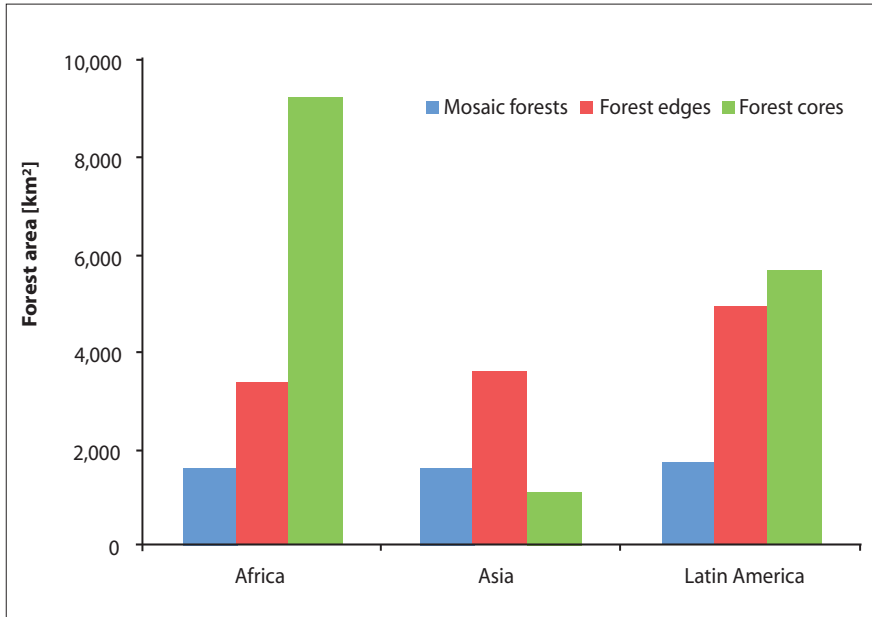


Figure 5.2. Approximate regional distribution of forest types
 Note: Rough proxies were used because it is impossible to map the stylised forest types. For the mosaic lands, only data on the forest portion was used.

Source: Chomitz *et al.* (2006) using global land cover data from 2000 (ECJRC 2003)

5.4 Matching needs and finance

Existing and potential sources of finance for REDD activities are both public and private (Table 5.3). Different sources suit different needs (Table 5.4). For example, the Organisation for Economic Co-operation and Development (OECD) does not classify public spending to acquire carbon credits as overseas development assistance (ODA). This is because these credits would count as ODA reflows (i.e. would have to be subtracted from ODA flows in the year they occur) (Dutschke and Michaelowa 2006). Activities that generate carbon credits will, therefore, have to be financed from the private sector and sales of REDD credits to Annex I governments for offsetting their national greenhouse gas (GHG) emissions.

Table 5.3. Potential sources of finance for REDD

Public finance	
Type	Description
Traditional ODA for forestry	<ul style="list-style-type: none"> Increasing; has risen 47.6% since 2000 and totalled almost USD 2 billion in 2005-07 (World Bank 2008) Provides grants, concessional loans, short-term financing for specific projects and long-term programme financing or budget support Also interested in co-benefits related to reducing poverty, conserving biodiversity and improving governance
New ODA for REDD	<ul style="list-style-type: none"> Recent emergence of new REDD-related financing mechanisms that draw all or part of their revenues from international public finance sources Includes finance aimed at 'pump priming' the private sector, such as the World Bank's Forest Carbon Partnership Fund, and sources aimed at building public-sector capacity, such as the Congo Basin Fund
Domestic	<ul style="list-style-type: none"> Limited domestic public financing for forestry from taxes and royalties. Typically used for subsidies and other incentives Sponsors environmental services in forests
Private sector and carbon market finance	
<i>(includes Annex I government purchases of REDD credits as offsets in carbon markets)</i>	
Existing carbon market	<ul style="list-style-type: none"> Two components: voluntary and compliant (current compliance market excludes REDD) Compliance market restricted to afforestation/reforestation under the Clean Development Mechanism, which may or may not become part of a future REDD mechanism Voluntary market dominates in forestry, making up 18% of all projects globally in 2007 (Hamilton <i>et al.</i> 2007)
Future carbon markets	<ul style="list-style-type: none"> Three main avenues under discussion: <ol style="list-style-type: none"> integrating REDD into a global compliance carbon market; allocating auction proceeds; allocating revenues from other fees, fines and taxes Regional and domestic markets may also consider using REDD crediting for compliance: e.g. the European Union emissions trading scheme
Foreign direct investment	<ul style="list-style-type: none"> May constitute an important source, but investment is concentrated in low-risk countries with profitable forest industries Flows to forest sector have increased by 29% from USD 400 million in 2000-02 to USD 516 million in 2005-07 (World Bank 2008)
Domestic	<ul style="list-style-type: none"> Public-private partnerships or microcredit schemes. These are unlikely to be significant, especially in least developed countries, due to low level of resources, lack of expertise and difficulty in raising finance from risk-averse domestic banks
Non-profit	<ul style="list-style-type: none"> Represents growing proportion of international private finance Typically small, narrowly targeted grants; may not have wide REDD applicability Non-profits are interested in REDD and may be less risk-averse than profit-making enterprises

Public and private finance suit different forest types (Table 5.4). Public finance is extremely relevant for forests ‘beyond the agricultural frontier’ and in forest frontiers that have comparatively weak land tenure systems and governance structures. Private-sector finance could play a greater role in forest mosaic lands that have comparatively strong land tenure systems and good governance. However, forests in mosaic lands currently constitute the smallest share of tropical forests.

Table 5.4. Matching financial sources to forest types

	Forests beyond agricultural frontiers	Forest frontiers	Forest mosaic lands
Public finance	Significant need for international and domestic sources	Important for enabling REDD investments	Need depends on governance context
Private finance	Less likely, as clear land tenure required for REDD-payments	Likely, if enabling environment for REDD investments is secured	Highly likely, if enabling environment for REDD investments is secured

5.5 Public finance

Upfront public finance is needed to create policy environments that enable the delivery of effective REDD outcomes, especially in weak governance contexts. ODA finance will be crucial to cover capacity building costs. Few developing countries have shown the ability or political will to finance this aspect of REDD. Even if REDD were integrated into the global carbon market, an additional USD 11-19 billion each year would need to be found from other sources – most likely ODA – to halve emissions by 2020 (Eliasch 2008).

Increasing donor interest in REDD has boosted the amount of ODA available for carbon forestry. Programmatic or budget support helps strengthen government institutions and increases ownership of REDD systems. Where carbon returns are guaranteed, financing can be provided through loans. Support for capacity building can be channelled through technical assistance ODA.

But ODA is arguably a short-term solution; the recent increase in forestry-related ODA to almost USD 2 billion (2005-07) represents only a tiny fraction of the USD 11-19 billion recommended in the Eliasch review. Thus, ODA must be deployed strategically to stimulate and complement private investment. This means supporting basic readiness requirements and enabling

investments. Investments to leverage private investments are particularly important in high-risk countries where little private-sector finance is available. However, ODA financing for forestry has a tendency to gravitate towards safer environments, such as South and Southeast Asia and the Americas, rather than to Africa (World Bank 2008).

The likely dependence of REDD on ODA, especially for creating new international funds to support REDD, raises some concerns about how such efforts should be structured. These include:

- Lack of harmonisation among initiatives, which may create added burdens for resource-stretched governments
- Lack of alignment with government systems and the low absorptive capacity of governments to use the funds efficiently
- Risk of diverting ODA from other areas, such as health and education

These harmonisation and alignment concerns mirror the concerns across the aid sector that led to the Paris Declaration on Aid Effectiveness (OECD 2005).

5.6 Carbon market finance

Carbon finance can mobilise more and longer-term funding than ODA, especially when greenhouse gas offset markets offer the incentive to trade carbon credits. Carbon investments are more likely in countries with strong governance structures and well-defined tenure systems. National verification systems, or certification schemes, may also attract investment. The level of private financing depends on several factors, including:

- Long-term GHG emissions reduction commitments
- Carbon credits from sub-national approaches in the REDD scheme
- Early action to generate REDD credits that can be banked towards compliance with post-2012 targets

The voluntary carbon market is a useful testing ground for different approaches to REDD, but is unlikely to generate sufficient financing for large REDD initiatives. Emerging financial mechanisms, such as Forest Backed Bonds (tradable financial instruments backed by forest-related assets), could also be new sources of capital (Petley 2007).

International carbon markets are an attractive source of funds for REDD because they could potentially mobilize significant amounts of financing in the long run. The main options currently being discussed in the REDD debate are: (i) integrating REDD into a global carbon market; (ii) allocating auction proceeds to a REDD fund; and (iii) allocating revenues from other fees, fines and taxes to a REDD fund.

5.6.1 Integrating REDD into global carbon markets

The largest potential for REDD finance is in carbon market mechanisms that convert emissions reductions from REDD initiatives into carbon credits that industries and countries can use to comply with emissions commitments.

The amount generated by tradable credits for REDD depends on several factors. These include the depth of Annex I emission budgets, fungibility of REDD credits in the carbon markets and other details of the REDD architecture. Fungibility refers to the type and degree of integration of REDD into existing carbon markets. There are fears that full fungibility will flood carbon markets with REDD credits, assuming that these credits will be cheaper than credits from other mitigation activities. This is not necessarily the case (see Chapter 3 of this book). On the one hand an oversupply of cheap carbon credits could reduce carbon prices and remove incentives for further REDD activities. On the other hand, the acceptance of REDD credits as a compliance tool creates demand for further REDD activities. One study shows that REDD credits, even when unrestricted market access is assumed, would be highly unlikely to swamp the carbon market. Allowing all forest credits into the market is only likely to bring carbon prices in 2020 down from USD 35 to USD 24 (Piris Cabezas and Keohane 2008). The Eliasch (2008) review also concludes that the fear that markets will be flooded seems exaggerated. Carbon traders, several Latin American countries and Indonesia support full fungibility (see Table 5.5).

A number of proposals address the risk of flooding the market and thereby endangering environmental integrity (Table 5.5). These include adopting deeper targets, controlling fungibility of REDD credits in a 'dual market' (Ogonowski *et al.* 2007) and creating a new trading unit specific for REDD (Hare and Macey 2007).

Table 5.5. Proposals for fungibility of REDD credits in carbon markets

Proposal	Description	Type
Full fungibility (country proposals incl. Belize, Chile, Indonesia <i>et al.</i>)	REDD credits are sold as offsets to Annex 1 countries. Demand for REDD arises from because REDD credits are comparatively cheap. Capping the amount of credits allowed in systems is possible	Fully fungible REDD coupled with deeper emissions reduction targets by Annex B countries, resulting in higher demand for credits
Dual markets (Center for Clean Air Policy - CCAP)	Creates a separate REDD trading scheme; demand generated by transferring a share of Annex I commitments to the new market (amount depends on overall Annex I targets)	Separate, but linked market – transfers some commitments from current market to REDD market. Fungibility may increase as REDD market matures
Tropical Deforestation Emission Reduction Mechanism (TDERM) (Greenpeace)	Introduction of a new trading ‘unit’ (Tropical Deforestation Emission Reduction Unit/ TDERU). TDERUs will be used by Annex 1 countries to fulfil part of their reduction targets. For predictability of revenue flows, levels of TDERU purchases would be set. A maximum would also be set to prevent large-scale offsets	Separate, but linked market – transfers some commitments from current market to REDD market

5.6.2 Allocation of auction proceeds to a REDD fund

Another way to raise funds is to auction allowances from emission-trading schemes, and allocate some of the proceeds to a global REDD fund. The Warner-Lieberman Bill (US), and EU Climate and Energy Package, foresee diverting some of the proceeds from auctioning allowances to support REDD.

The European Commission is considering earmarking 5% of auction proceeds from the European Union Emissions Trading Scheme after 2012 for global efforts to combat deforestation. This would generate an estimated USD 2.0-2.7 billion a year by 2020 (EC 2008). Germany recently pledged to invest all the money it raises from auctioning EU allowances into domestic and international climate activities and policy interventions. These auctions raise significant resources. In Germany alone, proceeds of auctions reach more than EUR 1 billion annually. Auctioning allowances for international aviation and marine emissions could raise an estimated USD 40 billion (Eliasch 2008). An auction of all industrialised countries’ emissions could raise at least EUR 100 billion annually (Dutschke 2008). But, it is uncertain what proportion of the proceeds of these auctions would be channelled to REDD, as there will be competing claims from other sectors and mechanisms, such as technology transfer and adaptation.

Some UNFCCC proposals (CAN-International, Norway) promote the auction of emissions allowances at the international level (i.e. assigned amount units (AAU) of the Kyoto protocol system) as an additional way to leverage funds for REDD.¹ By decoupling REDD from the overall reduction targets these proposals reduce the risk of flooding the market. A critical question, however, is how to ensure that these auction proceeds will effectively be earmarked for REDD purposes.

5.6.3 Allocation of revenues from other fees, fines and taxes

A third proposal is to allocate taxes and levies to a REDD funding mechanism. These could be linked to carbon markets or come from other markets. Current options include:

- Imposing a fee on the transfer of assigned amount units (AAUs) for Parties to the Kyoto Protocol or other activities/sectors;
- Paying fines from non-compliant countries into a compliance fund.

Levying a fee on a Clean Development Mechanism (CDM) or other carbon project at the international level is comparable to the 2% levied on CDM transactions to support the UNFCCC Adaptation Fund. Such a system could also be applied at the national level. China, for example, established a system of tiered taxation of CDM projects to redirect finance from large industrial CDM projects towards initiatives that have more impact on sustainable development (Muller 2007). Other options include a levy on international air travel, which could generate revenues of USD 10-15 billion, or a tax on wholesale currency transactions (Tobin tax), which could raise about the same amount (Eliasch 2008).

These mechanisms could raise substantial amounts of funding, but have their drawbacks from efficiency, effectiveness or equity perspectives – notably as regards allocating revenues equitably among countries and sectors. Taxes and fees affect the supply and demand of emissions reductions activities. On the demand side, imposing fees on Annex I countries to purchase AAUs, for example, may divert budget allocations away from other areas.

Additionally, some of these proposals could be politically difficult. For example, fines for non-compliance would go much further than the ‘soft’ enforcement mechanisms of the Kyoto Protocol Compliance Committee. They would be unique as multilateral environmental agreements traditionally have weak compliance systems.

¹ While emission allowances in the EU carbon market are already auctioned in part, allocation of AAUs to the countries under the Kyoto Protocol is free of charge. According to CAN-International, selling AAUs at a price of USD 30-40 a piece would raise USD 3.75 billion for every 1 % of AAUs sold. Selling a fraction of AAUs, e.g. 20-30 %, would result in a total of USD 75-112.5 billion a year which would then be available for adaptation, REDD and technology transfer (Scholz and Schmidt 2008).

5.7 Addressing the financing gaps

Exploiting the full potential of REDD requires funding at unprecedented levels and is among the main challenges in REDD. Financing shortfalls are likely in: (i) the demonstration period for the international REDD mechanism prior to 2012; and (ii) in countries where forest governance is weak and, thus, where the investment environment is high risk – as is the case in most tropical forestlands.

ODA could support countries with restricted access to the REDD market. This would improve international equity. By designing appropriate mechanisms, financing gaps may also be addressed. Good examples of appropriate mechanisms are rewarding early action (which will be crucial for attracting early and high-risk private investment), and giving credit for REDD policies and measures (PAMs). These kinds of measures could reduce any perverse incentives that may encourage countries to step up deforestation before 2012. Market-linked mechanisms, such as including REDD credits in the carbon market, auctioning emission allowances and/or fees and taxes on carbon transactions, are the most promising avenues for addressing financing shortfalls.

Whatever the scenario, we need to find ways to make up the shortfall in financing from both public *and* private sources. Above all, a future REDD mechanism should be open to flexible and creative financing approaches, so it can adapt to countries' changing needs and experiences.

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