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Leveraging global climate finance for sustainable forests

Opportunities and conditions for successful foreign aid to the forestry sector

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Abstract

Forest loss and degradation remains a leading environmental problem. The long history of sustainable forest management has often failed to meet expectations—constrained by funding, governance, capacity and competing interests. Initiatives from the climate change policy arena are opening new ways for a broader mainstreaming of forest management, specially through foreign aid mechanisms towards Reducing Emissions from Deforestation

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Keywords: sustainable forest management, foreign aid, official development assistance, climate change finance, REDD+, forestry sector governance
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and Forest Degradation (REDD+). This paper addresses key questions regarding the potential of REDD+ to support sustainable forest management in the context of complex, multiple stakeholder interests and negotiations, including those of local resource users and international donors.

Acronyms

CBD	Convention on Biological Diversity
CDM	clean development mechanism
CIFO	Center for International Forestry Research
FAO	United Nations Food and Agricultural Organization
FCPF	Forest Carbon Partnership Facility (of the World Bank)
FIP	Forest Investment Programme
GCF	Green Climate Fund
GEF	Global Environmental Facility (of the World Bank)
GHG	global greenhouse gases
ITTO	International Tropical Timber Organization
MPOC	Malaysian Palm Oil Council
NGOs	non-government organizations
PES	payment for ecosystem services
SFM	sustainable forest management
TCG	Terrestrial Carbon Group
UNCED	United Nations Conference on Environment and Development
UNFCCC	United Nations Framework Convention on Climate Change
UNFF	United Nation Forum on Forests

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1 Introduction

1.1 Global forest loss and degradation

Forests provide a range of key ecosystem services, including services essential to climate change mitigation (Canadell and Raupach 2008; IPCC 2007) and adaptation (MEA 2005; Naidoo et al. 2008; Turner et al 2009). Forests also provide widely recognized ecosystem services related to biodiversity conservation (FAO 2000), provision of water resources (Fischlin and Midgley 2007) and soil protection (Sidle et al. 2006; Garzia-Ruiz et al. 2008; Stickler et al. 2009). Moreover, forests directly contribute to the livelihoods of more than half a billion people[1] (Chhatre and Agrawal 2009), many of whom are resource poor in tropical developing countries (Sunderlin et al. 2005; Campbell 2009).

Despite its global importance, the forestry sector continues to be under intense pressure. The United Nations Food and Agricultural Organization (FAO) reports that between 2000 and 2010, approximately 13 million hectares of forests were converted to other uses annually, or were lost through natural causes (FAO 2010). Moreover, many remaining forests are subject to relatively weak governance and mismanagement that allow for unsustainable timber harvest and forest encroachment. The International Tropical Timber Organization (ITTO) reports that only 5 per cent of tropical forests are sustainably managed (Nasi et al. 2011), and recent estimates suggest that up to 15 per cent of internationally-traded roundwood might originate from illegal sources (Contreras-Hermosilla et al. 2007).

The general lack of global progress on improving tropical resource management can be attributed to a number of proximate and indirect factors, including widespread agricultural expansion and increasing global agricultural consumption; global demands for tropical hardwoods and forest resources; a general lack of on-the-ground monitoring and enforcement, and cumulative anthropogenic environmental stressors that amplify natural hazards (Geist and Lambin 2002; Dellasala et al. 2012). Moreover, tackling deforestation and degradation poses enormous challenges, especially given the context-specific drivers (e.g., socioeconomic, demographic or political), the multitude of norms, rules and policies that shape resource use and regulation across different countries and levels of governance, and the difficulty for developing countries to forego conventional, extraction-based economic growth strategies (Corbera and Schroeder 2011).

These various drivers are responsible for extensive deforestation and degradation, habitat fragmentation, soil degradation, depletion of biomass and associated carbon stocks, transformation of stand age and species compositions, species loss, species introductions, and a range of cascading effects such as increased fire risk (Thomson et al. 2009). Cumulatively, these types of land use changes in the forestry sector also represent the second largest source of global greenhouse gas (GHG) emissions, accounting for 10-20 per cent of total anthropogenic carbon emissions (Houghton 2008; Harris et al. 2012). Additional accounting of below-ground biomass, which represents more than half of the carbon storage in tropical forests, could dramatically increase the importance of forests to climate change mitigation (Verchot and Petkova 2009; Ziegler et al. 2012).

[1] According to the World Bank, more than 1.6 billion people directly depend on forest resources.

Given the importance of forest resources to the global environment, economic development and to the wellbeing of human communities at multiple scales, forestry sector sustainability has been an area of focus for various forms of foreign aid and official development assistance (ODA).

1.2 Scope

In this paper we refer to a wide range of approaches and interventions for promoting tropical forest conservation and sustainable management. However, we focus principally on sustainable forest management (SFM) as a strategy for protecting forest resources for their associated ecosystem services (e.g., water, carbon stocks, biodiversity) while still allowing for some forms of multiple use (e.g., restricted resource harvest). SFM in tropical developing countries has received considerable foreign assistance and attention within global multilateral institutions. While multiple use is not appropriate in all conservation contexts, SFM is a strategy through which to balance multiple environmental and human objectives, and it also accommodates forestry sector climate change mitigation efforts (see section 4).

This paper focuses on the role of climate finance as foreign aid used for the purposes of climate change mitigation and adaptation going from developed to developing countries, which is 'new and additional to existing development finance' (Arndt and Bach 2011). More specifically we focus on the role of foreign aid in helping to achieve the SFM multiple objectives, especially given the costs associated with improving sector management and reducing deforestation. As such, we specifically consider the potential for additional donor support for the forestry sector associated with new climate change finance. Indeed, the scale of foreign aid directed towards forests has increased dramatically in recent years, in recognition that forests have a significant potential to help mitigate climate change through avoided emissions and through enhanced carbon sequestration. This includes traditional ODA to improve forestry sector management, as well as a number of new and proposed financing strategies. In this context, it is noteworthy that policies for reducing emissions from deforestation and forest degradation, and through the conservation, enhancement and sustainable management of forest carbon stocks (REDD+) have emerged as the principal foreign aid mechanism for promoting forest sustainability.

REDD+ is a prominent climate change mitigation strategy and mechanism that aims to reduce carbon emissions in the forestry sector and enhance carbon stocks (e.g., through reforestation). The mechanism's function and financing are under negotiation through the United Nations Framework Convention on Climate Change (UNFCCC), as well as through a number of non-governmental, national and bilateral and multilateral donor initiatives (see section 3.3). Generally, REDD+ policies propose to channel funds from industrialized nations to developing tropical nations in order to support forest conservation interventions that would (i) decrease GHG emissions by reducing deforestation, reducing forest degradation and conserving existing forests and their biodiversity, and (ii) increase carbon sequestration by promoting sustainable forest management (e.g., by selective logging) and enhancing carbon stocks (e.g., by tree planting). The proposals are novel in their broad geographic scope, significant financing, and use of performance-based payments—payments that would be delivered only if emissions reductions were measured, reported and verified.

The paper is structured following the four main questions: section 2 considers 'what works (and what doesn't)?', assessing the potential for SFM and multiple forest use to help balance human and environmental objectives within the forestry sector, and the historical role of

foreign aid in supporting related strategies. The section draws lessons from these experiences to help inform future interventions. Section 3 considers 'what could work' by assessing recent policy developments in the forestry sector related to REDD+ policies. It considers how REDD+ policies both integrate lessons from previous instruments and differ from them, creating the potential to overcome the challenges that have limited previous interventions. Section 4 addresses 'What is transferable?', and introduces a conceptual framework to explore the conditions for promoting SFM and forest conservation across the developing tropics. The framework identifies the financial conditions, governance requirements and policy trade-offs that need to be considered to increase the effectiveness of foreign aid in the forestry sector. Section 5 considers 'What is scalable?' and how REDD+ policies represent a dramatic financial and geographic scaling-up of SFM and forest conservation. Importantly, it explores this scaling-up in the context of complex, multiple stakeholder interests and negotiations, including those of local resource users and international donors.

2 What works (what doesn't)?

2.1 Forest management for multiple objectives

In practice, forest conservation and management include a broad range of strategies. Traditional exclusionary conservation strategies, such as protected areas in which resource access is heavily restricted or prohibited, may continue to be appropriate in many contexts. However, there is also broadening recognition that many other management arrangements can also be successful at achieving conservation objectives, and that long-term SFM often has to balance multiple human development and environmental conservation objectives (Hutton et al. 2006). This is represented in the diversity of conservation strategies that have developed over the past 20-30 years, including voluntary 'payment for ecosystem services' (PES) programmes that have emerged to incentivize landholders to engage in environmentally-friendly practices. Forest management strategies also include diverse state, private and community-based arrangements that include multiple uses, such as selective logging, harvest of non-timber forest products or regulated hunting.

SFM has presented one of the most promising frameworks through which to balance multiple, often competing objectives within the forestry sector. As with definitions of 'sustainability' in other sectors (WCED 1987), defining 'forest sustainability' and 'sustainable forest management' is challenging, and meanings tend to vary given conservation objectives, development goals and stakeholder interests. SFM is specifically understood as promoting forest management for multiple objectives, and implies some degree of sustainable resource extraction in a way that also maintains multiple ecosystem functions (Wiersum 1995). Principles for SFM were first established during the 1992 United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro. Since then, SFM has remained a somewhat flexible concept, defined by the 2008 UN Resolution 62/98 (UN 2008):

> as a dynamic and evolving concept that aims to maintain and enhance the economic, social and environmental value of all types of forests, for the benefit of present and future generations. It is characterized by seven elements, including: extent of forest resources, forest biological diversity, forest health and vitality, productive functions of

forest resources, protective functions of forest resources, socioeconomic functions of forests and legal, policy and institutional framework.

The United Nation Forum on Forests (UNFF) has also acknowledged these elements and recommended them to national governments as a framework for the development of SFM policies (UNFF 2004). McDermott et al. (2007) provide a detailed review of how international forest policies include these themes.

The results of SFM initiatives have been mixed, and have generally lagged behind expectations, particularly in the tropics (Garcia-Fernandez et al. 2008). For example, forest certification schemes to promote sustainably sourced wood products have failed to become firmly established in tropical areas, which have also often lacked robust audits, compliance and enforcement (Rametsteiner and Simula 2003). Indeed, the viability of SFM seems to depend heavily on a strong governance context including tenure clarity, stakeholder buy-in, and capacity which have limited progress in many tropical developing regions (Nasi et al. 2011). Moreover, the high opportunity costs associated with tropical deforestation in many regions have limited the viability of SFM to compete on economic grounds (Nasi et al. 2011, see Box 3 in section 3.3). Nevertheless, there is broad evidence that when SFM is operationalized, the resulting logged forests can retain significant biodiversity, carbon and timber stocks (Putz et al. 2012). As we discuss in section 3, properly implemented SFM principles have the potential to greatly improve tropical forest management.

2.2 Foreign aid for SFM

Traditionally, financial support for SFM has come from a number of sources, including central and local government budget allocations of revenues from the sale of forest-related goods and services and private sector investments. However, foreign aid has also been a leading catalyst of the SFM agenda, principally channelled through financial contributions to bilateral and multilateral partners, as well as through non-governmental organizations (NGOs).

Foreign aid flows into forestry sector management and conservation emerged strongly following the 1992 Rio Earth Summit, through a range of international conventions, instruments and financing facilities, such as the United Nations' Environment Programme, Framework Convention on Climate Change, Convention on Biological Diversity, Forum on Forests and the International Tropical Timber Organization. One of the most important international financing mechanisms for forests has been the Global Environmental Facility (GEF), which provides recipient countries with unconditional grants to cover the incremental costs of actions to protect the environment (Parker et al. 2009). The GEF programme has disbursed US$1.6 billion since 1991, primarily to initiatives that address biodiversity conservation and land degradation, although direct SFM investments have become an increasingly important part of their portfolio (GEF 2010). The GEF-4 SFM programme was started in 2007 and has allocated more than US$300 million (GEF 2010; FCP 2012). More recently, the GEF-5 programme has explicitly incorporated climate change mitigation and has provided a separate funding envelope of specific donor support for SFM/REDD+ actions that target climate change mitigation and adaptation.

Donor financial support specifically for biodiversity conservation has also supported SFM initiatives. Parker et al. (2012) estimate that the global scale of funding for biodiversity and ecosystem services in 2010 was US$51.5–53.4 billion. Much of this funding originated from

government support to agricultural subsidies and greening commodities to benefit biodiversity conservation, sustainable forest management and, most recently, REDD+ (Stephenson 2011; Streck 2012). However, the ODA contribution is smaller and in that same year it was estimated that US$6.3 billion arose from bilateral ODA to developing countries (Parker et al. 2012).

2.3 Lessons from forest conservation and management

Decades of experience with forest resource management merit careful consideration in the context of designing new policies and maximizing the effectiveness of foreign aid, especially given limited resources and shortfalls in the performance of historical investments (Winterbottom 1990; Kanowski et al. 2011). SFM principles have been embodied in a wide range of conservation instruments in various forms, including integrated conservation and development projects (Blom et al. 2010), community-based natural resource management (Agrawal and Angelsen 2009), and forest certification schemes (Upton and Bass 1995). Increasingly, international efforts have drawn on novel, voluntary programmes such as payment for ecosystem services (PES) initiatives (Engel et al. 2008; Blom et al. 2010, see Box 2 in section 3.2). While many previous initiatives have been relatively local and project-based, there is equal experience with how broader dynamics, including national governance, politics, and global resource demand, shape the forestry sector (McDermott et al. 2007; Corbera and Schroeder 2011).

We present a synthesis of key lessons derived from this broad array of initiatives to develop a rough list of considerations for donors investing in the forestry sector through REDD+. These include insights related to long-term mechanism financial sustainability; the acknowledgement of policy trade-offs; and the importance of landscape-level approaches to conservation; monitoring and enforcement; forest governance and conditionality of payments.

Forest conservation and management require long-term, stable funding (Phelps et al. 2011). However, it is generally agreed that historical financing for SFM and forest conservation efforts have been inadequate (Tomaselli 2006), and have been critiqued as ‘long on rhetoric and short on achievements (Holopainen and Wit 2008). For example, while the estimated global financing cost of implementing SFM ranges between US$70–160 billion per year (Tomaselli 2006; FCP 2012; Global Witness 2012), actual funding has been estimated at around US$18 billion per year, of which ODA represented only US$1.1 billion in 2004 (Tomaselli 2006).

Crucially, forest management generally involves high opportunity costs (associated with foregoing conventional land use practices) and so often requires up-front investments (Holopainen and Wit 2008; Nasi et al. 2011). This is especially true in the context of growing commodity prices, which have increased the opportunity costs associated with conservation (Butler et al. 2009; Venter et al. 2009). Where forest management is profitable—through community management, multiple resource use, PES programmes, or donor subsidies—deforestation has generally been reduced/halted. Investing in and fostering the profitability of conservation and sustainable resource management are fundamental to reducing deforestation.

It is also important to acknowledge the existence of policy trade-offs. Win–win solutions are commonly proposed in the forestry sector to accommodate, for example, forest conservation with resource harvest, poverty alleviation, and agricultural intensification (Garcia-Fernandez

et al. 2008; Phelps et al. 2012a). Such approaches are also common in SFM planning. However, win-win solutions are often unrealistic (McShane et al. 2011; Hirsch et al. 2010; Lindenmayer et al. 2012). In the context of REDD+ there are trade-offs between carbon sequestration and biodiversity conservation (Phelps et al. 2012a; Grainger et al. 2009; Harvey et al. 2010); climate change mitigation and adaptation targets (Locatelli et al. 2011) as well as conservation and development goals (Adams et al. 2004), c.f. section 4. This implies that foreign aid instruments for sustainable forestry should allow for negotiating related trade-offs early during planning processes (Blom et al. 2010; McShane et al. 2011).

There is growing recognition that while site-specific interventions can have positive conservation outcomes, broader-scale management is also necessary to maximize biodiversity conservation and maintain diverse ecosystem function (UNESCO 2007; Brown et al. 2008; CBD 2010). Thus, forest management should also take into account a landscape-level approach. For instance, in the specific context of climate change mitigation, donors should also consider that larger-scale management potentially reduces cases of 'carbon leakage' (Oliveira et al. 2007) in which interventions to reduce deforestation at one site simply displace pressures and increase emissions elsewhere (Wunder 2008).

Prior experiences also highlight the importance of regular monitoring and rule enforcement to project success (Blom et al. 2010; Persha et al. 2011), especially given that natural resources management is susceptible to rule-breaking and corruption in institutionally weak environments (Smith and Walpole 2005; Bennett 2011). Broader forestry sector governance is also key factor to improving forest management (Ostrom 2010; Agrawal et al. 2008; Kanowski et al. 2011). However, many forest-rich tropical developing countries have low governance scores that fundamentally limit their ability to improve management (Karsenty and Ongolo 2011). Specifically, good forest-sector governance translates not only into enforcing regulations and adjudicating infractions, but to decisions on land use planning, resource access, and land tenure—factors that are also crucial to determining forest management regimes and conservation outcomes (Nasi et al. 2011; Grieg-Gran et al. 2005; McElwee 2012).

There is evidence that good forest governance also specifically includes local engagement, which can involve a wide range of types and levels of participation (Arnstein 1969). Specifically, evidence highlights the importance of addressing local-level distributional issues and ensuring that benefits to local communities are both visible and equitable (Chan et al. 2007). However, local engagement also extends beyond tangible benefits, and includes procedural issues such as active engagement in resource management decisions. Evidence also shows that local support, accountability and legitimacy are crucial to enhancing forest re-growth, protecting carbon stocks and conserving biodiversity (Chhatre and Agrawal 2009; Ostrom 2010; Persha et al. 2011).

3 What could work?

3.1 Emergence of REDD+

Policies for 'reducing emissions from deforestation and forest degradation' and through the conservation, enhancement, and sustainable management of forest carbon stocks (REDD+) are now at the forefront of climate change mitigation policy (Box 1; e.g., UNFCCC 2013).

The policies have also quickly come to dominate broader forest-sector policy, including links to biodiversity conservation and forest management, largely because of the unprecedented scale of donor finance that is supporting REDD+ initiatives (see section 3.3). REDD+ policies have been widely hailed as a potential 'game changer' for tropical forest management conservation (e.g., Venter and Koh 2012). Moreover, REDD+ policies are highly synergistic with SFM policies, as multiple use (e.g., selective and reduced impact logging) can be compatible with efforts to protect and enhance forest carbon stocks (e.g., Nasi et al. 2011).

Policies associated with REDD+ are preliminary, evolving and heterogeneous across the dozens of participating countries. However, there is evidence that many new REDD+ policies are taking on lessons from previous forest management and conservation initiatives, offering potential success where previous initiatives have failed or come up short (section 4; see Blom et al. 2010). Moreover, REDD+ policies seek to exploit the potential of PES conservation instruments (section 3.2) and have the potential to overcome many of the financial limitations that have hindered previous efforts (section 3.3).

Box 1: REDD+ forest carbon policies

In 2007, Parties to the UNFCCC agreed that improved forest management and conservation would play a major role in future efforts to reduce greenhouse gas emissions. While, to date, negotiators have failed to reach a binding agreement on reducing climate change emissions, there has been broad consensus on efforts to reduce emissions from the forest sector, and to enhance forest carbon stocks. REDD+ policies continue under negotiation in the UNFCCC and are progressing in parallel through a number of national, multi- and bilateral agreements that are supporting a wide range of 'readiness' activities in preparation for a future, more formal mechanism through the UNFCCC.

A future REDD+ mechanism proposes to channel funds from industrialized nations that have historically been responsible for the majority of GHG emissions (UNFCCC Annex I nations; see Section 5.2.) to tropical developing countries, in an effort to incentivize improved forest management. It proposes to support five types of REDD+ activities in tropical developing countries.

Five REDD+ activities:
- Reduce emissions from deforestation;
- Reduce emissions from forest degradation;
- Conserve existing forest carbon stocks;
- Carbon stock enhancement;
- Sustainable management of forests.

REDD+ carbon stock verification:

The UNFCCC has established guidelines for monitoring and reporting on forest carbon stocks, and working groups continue to generate recommendations for new standards. A number of 3rd party organizations have also established independent carbon verification standards and services.

REDD+ safeguards:

The UNFCCC and a number of 3rd party agreements and organizations have also established social and environmental safeguards to ensure that REDD+ does not result in unintended negative consequences (see Section 5).

REDD+ co-benefits:

Recognizing that improved forest management has the potential to yield additional benefits for biodiversity and forest-dependent communities, many REDD+ policies have sought to jointly address human and environmental priorities within forest management (see sections 4.4, 4.5). The distinctions between safeguards and co-benefits, however, are not yet clearly established within UNFCCC negotiations.

Source: Compiled by the authors.

3.2 Leveraging PES instruments for SFM

The UNFCCC has specifically included SFM within the list of REDD+ activities (UNFCCC 2010; Box 1), recognizing the multiple uses of forests and that carbon gains can arise not only from traditional conservation, but from dynamic management that includes human use (e.g., Berry et al. 2010; Nasi et al. 2011). In this respect, REDD+ and SFM objectives are highly compatible. Moreover, REDD+ policies are based heavily on the logic of international PES schemes, which leverage incentives to promote voluntary conservation actions (Box 2). Recent evidence suggests that voluntary, but conditional payments can potentially overcome some of the limitations of other conservation policy instruments (Engel et al. 2008) to catalyse effective and cost-efficient conservation outcomes (Wunder 2008). Such PES schemes are a prospective strategy through which to promote SFM and conservation, as many of the benefits of SFM (e.g., biodiversity and carbon conservation) are external to forest owners and managers (Chipeta and Joshi 2001). Moreover, unlike many traditional conservation instruments, PES involves an incentive system that is conditional on the actual provision of the environmental service, which promises to increase instrument effectiveness (Wunder 2008). In comparison with traditional command-and-control regulation (e.g., protected areas), PES schemes also have the potential to offer alternative livelihoods for local communities, are more flexible, and allow for better targeting (focusing on areas/ecosystems with higher value in terms of service provisioning) and thus potentially increase efficiency (Wunder 2008).

A meta-analysis of incipient government-led PES schemes to reduce deforestation revealed that these have yielded uncertain conservation outcomes (Pattanayak et al. 2010). However REDD+ policies have the potential to excel where many existing PES schemes have yielded few or uncertain outcomes (Pattanayak et al. 2010; Venter and Koh 2012).

Box 2: Payment for ecosystem services (PES)

Payment for ecosystem services schemes can be defined as voluntary transactions where a well-defined environmental service (or a land use likely to secure that service) is being 'bought' by a service buyer(s) from a service provider(s), if and only if the service provider secures service provision (Wunder 2008). This contingent payment is known as conditionality.

However, PES can also refer to a much wider set of conservation instruments that leverage incentives to promote conservation, not necessarily through a traditional buyer-seller relationship, and can include donor-supported conservation efforts that are based on incentives.

Types of mechanisms:	• Regulation and penalty by limiting access
	• Cap and trade, like the carbon markets
	• Direct payments, where providers receive payment for supplying services
	• Voluntary agreements (Kinzig et al. 2010)
Implementation examples:	• Carbon sequestration in China
	• Watershed protection in South Africa and Mexico
	• Biodiversity conservation in Costa Rica and Nicaragua (Kinzig et al. 2011)
Challenges of PES:	• Conditionality on service provision
	• Additionality
	• Enrolment
	• Monitoring, reporting and verification (MRV)
	• Social justice (Pattanayak et al. 2010)

Source: Compiled by the authors.

REDD+ involves national-level land use planning, and is being deployed across the developing tropics, which represents a more integrative approach to conservation and a significant scaling-up over previous conservation efforts (see section 5 on scalability; Pattanayak et al. 2010). Notably, REDD+ policy in many contexts has also adopted a strong focus on conditionality, by which funds are fully disbursed only after conservation outcomes are demonstrated. This represents a sharp departure from previous conservation and ODA initiatives (ibid.). For example, only a small fraction of Norway's US$1 billion commitment to Indonesia has been disbursed due to lack of demonstrable progress in reducing emissions. Similarly, the UNFCCC 18th Conference of Parties in Doha established a strong focus on 'results based finance', with donors requiring clear outcomes for their investments. This focus on results extends to the REDD+ focus on additionality. In principle, REDD+ financial aid and investments for REDD+ should demonstrate conservation outcomes that surpass business-as-usual or do-nothing scenarios. This is a significantly more stringent requirement than has traditionally been placed on foreign aid or conservation efforts.

Because of this strong performance-based nature, monitoring and enforcement are at the core of most REDD+ plans. There are considerable resources being dedicated to country-specific carbon accounting, baselines and monitoring against which to measure success. To this end, donor support in the context of REDD+ is very heavily focused on strengthening forestry sector governance and building the local capacity requisite for successful forest management (Cerbu et al. 2011).

Forest PES is also an attractive instrument because of its potential to balance human and environmental considerations with the forestry sector. Unlike traditional exclusionary approaches to conservation, in principle it seeks voluntary cooperation (although see Beymer-Farris and Bassett 2012). Many schemes seek to provide local land managers with sustainable development and livelihood options and/or fair compensation for their conservation actions, which is compatible with multiple resource use within forests. While outcomes are variable, many PES schemes in Latin America have increased household incomes and tenure security and helped to strengthen local resource management institutions (Grieg-Gran et al. 2005; Pagiola et al. 2005) although there are exceptions (see section 5.2).

Forest sustainability efforts based on PES face considerable challenges (see section 4). However, contemporary REDD+ policies are potentially integrating lessons from previous instruments and are leveraging incentives in ways that *could* serve to overcome many of the challenges that have limited previous initiatives and *could* serve to widely mainstream SFM objectives.

3.3 Increasing foreign aid for the forestry sector

Crucially, the potential for REDD+ to succeed in improving forestry sector management and sustainability across the tropics relies on the scale of financial investment the mechanism has received. To date, a vast majority of these resources represents new, additional and increased foreign aid, and encompass a major financial scaling-up for the forestry sector (Phelps et al. 2011). In this section we briefly present an overview of the actual architecture of foreign aid regarding REDD+, highlighting (i) the direction, type and scale of foreign aid flows, (ii) the primary actors in terms of donors and recipients, and (iii) the recent financing trends.

It should be noted that ODA disbursements into the forestry sector increased by an average of 125 per cent between the periods 2002–04 and 2008–10, mostly attributed to REDD+ related

financing (CPF 2012). In 2009, the Copenhagen Accord committed developed countries to contributing US$3.5 billion in fast-start climate finance between the 2010–12 period, especially for REDD+. Since then, commitments have increased to more than US$7 billion, surpassing all previous ODA into the forestry sector (Creed and Nakhooda 2011; Simula 2010). However, by the end of 2011 (when the pledges had reached US$4.17 billion), only US$446 million had been actually allocated and approved (Nakhooda et al. 2011). In many cases there is also little clarity over whether conservation financing has been additional to estimates of original ODA pledges, leading to some double-counting of funding towards ODA and REDD+ (Global Witness 2012), and creating debate over future financing scale for the forestry sector (Stephenson 2011).

To date, financial support for REDD+ has mainly been channelled through new bilateral agreements, which have amounted to US$4.8 billion since 2008 (Simula 2010). Recent ODA support has been overwhelmingly Norway's Climate Change Initiative (Table 1), which has pledged over US$2.3 billion, including US$1 billion to Indonesia, US$250 million to Guyana and US$72 million to Tanzania (Government of Norway 2011).

Many other donors, particularly smaller donors, have chosen to combine climate and forestry sector financing with traditional ODA (Streck and Parker 2012), and support has represented natural extensions of existing donor-recipient relationships developed over decades of partnership on sustainable forest and development programmes. However, the use of ODA budgets to deliver climate finance is a matter of much political debate, given the concerns that support for the forestry sector will substitute development aid. Stephenson (2011) differentiates three possible financing options in this respect. First, he proposes that a strict mitigation approach in which REDD+ finance would be separated from development activities so as to avoid compromising ODA. Second, a co-benefits approach would use to REDD+ finance to climate mitigation together with poverty alleviation and development, seeking to jointly catalyse improved forest management, sustainable development and biodiversity conservation (Creed and Nakhooda 2011; section 4). The last scenario involves use of ODA for forestry sector climate change mitigation, but only if these funds represent additional ODA.

Multilateral agreements represent about US$2.6 billion of ODA to REDD+ since 2008 (climatefundsupdate.org 2012; see Annex 1). Funding agreements include the REDD+ Partnership (a group of developed and developing countries with a commitment for international cooperation on REDD+ mitigation); UN-REDD programme partnership among UNDP, FAO and UNEP (US$119.9 million pledged/$118.9 million deposited), the World Bank's Forest Carbon Partnership Facility (FCPF), with funds divided into the REDD+ Readiness Fund (US$229.6 million pledged and deposited) and the Carbon Fund (US$204.5 million pledged/$179.3 million deposited); the Forest Investment Programme (FIP) (US$644 million pledged/$459 million deposited); the Congo Basin Forest Fund (US$165 million pledged and deposited), and the Amazon Fund (with US$1.32 billion pledged/$57 million deposited). The GEF has established a funding envelope that specifically draws on ODA to support SFM and REDD+ actions for climate change mitigation and adaptation in the forestry sector. This includes US$250 million in funding to incentivize developing countries to invest up to US$750 million of their allocations for biodiversity, climate change and addressing land degradation projections into SFM/REDD+ projects and programmes (GEF 2010). The upcoming GEF6 replenishment (2014–18) is likely to further expand foreign aid focus on SFM/REDD+ (CPF 2012), and the UNFCCC Green Climate Fund, currently under negotiation with plans to provide US$100 billion in annual climate change mitigation and adaptation financing by 2020, is likely to increase support to the forestry sector (GCF 2013).

Table 1: Major REDD+ funds disbursed by donor and recipient countries

REDD+ major donors	% funds	REDD+ major recipient countries	% funds
Norway	72.0	Guyana	23.5
Australia	7.0	Brazil	13.0
UK	6.7	Indonesia	11.0
US	5.0	Democratic Republic of Congo	5.0

Source: www.reddplusdatabase.org

This multi- and bilateral ODA is currently supporting REDD+ forest management efforts in over 40 developing countries, although ODA has been targeted to a subset of forest-rich countries with forests under immediate threat of deforestation (Table 1). Funding has principally supported capacity building within the forestry sector, REDD+ demonstration and early implementation activities, as well as support for increasing the scale of REDD+ efforts (Creed and Nakhooda 2011). Even given the prospect of increased private sector interest, ODA finance is likely to remain a strong contributor to the forestry sector in the near term (Phelps et al. 2011; Streck 2012).

Even though REDD+ represents a major increase in foreign aid for the forestry sector, for which it has been hailed as transformative, it is uncertain whether REDD+ financing will be enough to tip the balance in favour of widespread forest conservation and sustainable management (Boccucci et al. 2008). Although more than US$7 billion was pledged for REDD+ between 2008 and 2012, the required resources are substantially greater (Box 3).

There are two main proposed financing approaches through which policymakers anticipate recruiting adequate financing for REDD+: a fund-based and a market-based system. Some participating countries, including Brazil, support the establishment of an international REDD+ fund into which ODA could continue to be channelled. However, it remains very uncertain whether ODA could ever provide long-term, stable funding of the scale needed to operationalize REDD (Phelps et al. 2011).

Box 3: Cost of implementing REDD+

The costs of improving forest conservation and management across the developing tropics are cumulatively high. For example, offsetting deforestation in the Brazilian Amazon would cost between US$7–18 billion per year (Nepstad et al. 2009). Similarly, halting deforestation across all developing countries is estimated in the range of US$25-185 billion per year (Parker et al. 2009, 2012; UNFCCC 2007). The Eliasch Review estimated the global costs of REDD+ to be between US$17–33 billion per year, assuming a 50 per cent abatement of forest-related emissions by 2020 (Eliasch 2008). Kindermann et al. (2008) estimated the costs to halve deforestation by 2030 to be between US$17.2–28 billion per year, while the European Commission established an annual price tag until 2020 of US$19.7–32.8 billion (EC 2008). These studies estimate the total economic abatement potential from REDD+ activities, assuming a certain price per ton of carbon dioxide and a certain cost associated with land use conversion. The figure for actual abatement potential, however, is likely to be smaller than this, due to the various constraints on generating emission reductions through REDD+. As such, global cost estimates illustrate the maximum potential of forests and other land use activities to remove or retain GHG at a certain price point, rather than a realistic potential for emission reductions in the short to medium term (Streck and Parker 2012).

Source: Compiled by authors.

In lieu, countries like Costa Rica, Indonesia, USA and Australia have favoured a market-based REDD+ mechanism, and envision an increase in global trading of emissions credits derived from emissions reductions and carbon stock enhancement in the forestry sector. Some projections suggest that as a result, REDD+ financing could increase to US$6.2–39 billion per year by 2020 (CPF 2012; Streck 2012). However, the projections anticipate viable carbon markets and increased private sector participation, which to date has only contributed US$0.15 billion to REDD+ via voluntary carbon markets (Simula 2010; Hamilton et al. 2010). The small scale of private sector financing can be attributed to the slow on-the-ground development of REDD+, the gross unreliability of carbon markets (e.g., Clark et al. 2013) and overall uncertainty over carbon investments (Streck and Parker 2012; Phelps et al. 2011; section 4.1).

The European Union has generally supported a combined market-fund financing pathway (Rosendal and Andresen 2011), and it is likely that REDD+ will be funded through both public and private finance, including ODA, results-based payments from public sector overseas (e.g., Norway Partnership), and private investments in future carbon market (Streck 2012). Indeed, independent of the potential for a market-based approach, ODA is likely to remain an important source of funding for the forestry sector. For example, SFM/REDD+ require up-front financial support for a preparation and development phase for REDD+ (Stephenson 2011).

4 What is transferable?

4.1 Integrating lessons learned into REDD+

We argue that in the context of unprecedented financial flows into the forestry sector, REDD+ funding should be leveraged not only to reduce carbon emissions, but to ensure that REDD+ achieves multiple objectives—in recognition of the social ecological complexity of environmental management, in line with SFM objectives, and acknowledging that win-win outcomes are hard to come by. In this section we discuss the necessary conditions for leveraging ODA to achieve SFM objectives.

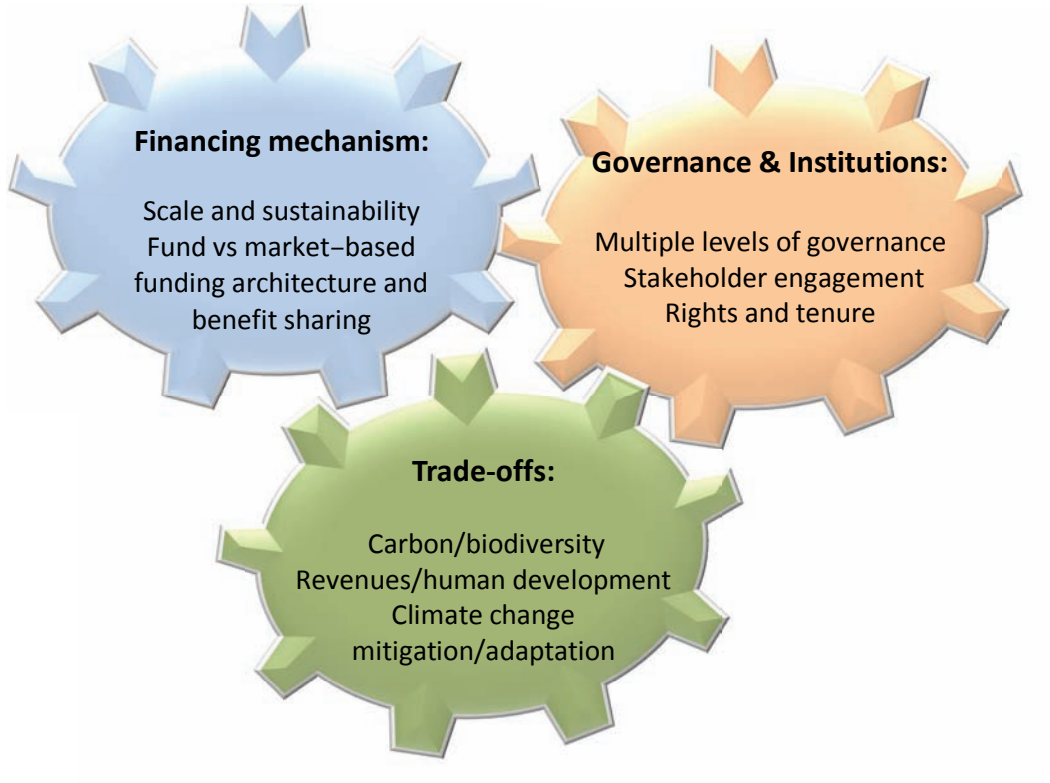
We use a conceptual framework based on lessons learned from previous conservation and SFM interventions (section 2.3), that identifies the necessary conditions for delivering forest sustainability via REDD+ as catalysed by donor finance. This framework analyses REDD+, taking into account (i) a range of financial considerations; (ii) institutional arrangements and governance processes; and (iii) trade-offs among climate change mitigation, adaptation and other ecosystem services, extractive industries and livelihoods. All considerations are instrumental to maximizing donor finance and ensuring long-term sustainable outcomes. Figure 1 illustrates the interconnection between the financial mechanisms of REDD+, the institutional and governance environment and the trade-offs that need to be acknowledged for the effective leverage of REDD+ finance flows.

While REDD+ has been popularized as a cost-effective approach to mitigating the impacts of climate change (Stern 2006), there remains significant uncertainty about how REDD+ will be financed in the future (section 3.3). The unprecedented scale of foreign aid required for REDD+ implementation aggravates the risks associated with financial uncertainties and instability. Financing also interconnects with how (and whether) the mechanism rewards

diverse ecosystem services (carbon storage, biodiversity conservation, development goals, etc.), the multiple levels of resource management (local, regional, national and international), and the diversity of forest actors (donors, governments, rural and indigenous communities, investors and forestry sector, conservationist and diverse NGOs, intergovernmental bodies). These factors, mediated through forest governance and institutional structures, are shaping key decisions about REDD+, including site selection, monitoring requirements, payments levels, and the requirements for participation.

Effective mechanism governance and financial architecture must recognize the associated social ecological trade-offs in order to identify clear objectives, fairly evaluate outcomes, and maximize donor financial resources (Stickler et al. 2009; Ghazoul et al. 2010a; Harvey et al. 2010; Hirsch et al. 2010; Phelps et al. 2012a). Given the central role of international donors in both financing REDD+ and policy development through bi- and multilateral engagement with forested countries, donors are uniquely positioned to shape how these conditions are assessed, and to consider competing stakeholder interests in mechanism design (see section 5).

Figure 1: Multiple dimensions shaping forest management in the context of multiple objectives



Source: Authors' elaboration.

4.2 Financing mechanism: building on foreign aid

Previous conservation and SFM initiatives have demonstrated that long-term effectiveness depends on financial sustainability (Chipeta and Joshi 2001; Blom et al. 2010; Asen et al. 2011). The performance of REDD+ in improving forest management relies to a great extent on the scale and reliability of its financing, the mechanism's ability to financially compete with alternate land uses (Vickers 2008), and the fair and wide distribution of financial benefits. Here we consider the financial conditions for successful long-term REDD+

implementation to scale-up effective forest conservation and sustainable management efforts, including the role of benefit sharing.

There is growing consensus that public financing is needed to operationalize REDD+ (Creed and Nakhooda 2011). Yet, despite considerable donor pledges, long-term, large-scale voluntary public finance cannot yet be assured (Phelps et al. 2011). The closest precedent for this type of voluntary giving is ODA, on which countries are increasingly relying for REDD+ funds (Streck and Parker 2012), but which has historically been highly unreliable and erratic (see Phelps et al. 2011). As such, the current architecture of REDD+ financing poses risks to financial sustainability. Sustainable financing relies on diversifying finance beyond voluntary donor-based support, including increased investment from the private sector, addressing dysfunction within international carbon markets, increasing emissions reduction commitments through the UNFCCC, adopting more resilient financial management structures, and potentially restraining REDD+ projects to scales that can be actively funded.

It is therefore widely expected that the private sector will contribute a significant share of future REDD+ finance (Streck and Parker 2012). Most proposals involve the establishment of carbon markets for ensuring demand for carbon credits generated by REDD+. As in the clean development mechanism (CDM), industrialized countries, private individuals and industries would purchase credits in compliance with mandated emissions mitigation efforts (UNFCCC 2010; Corbera and Schroeder 2011). However, to date, participation of the private sector has remained limited due to the associated high risks regarding carbon price fluctuation and significant uncertainties over the long-term demand for carbon emission reductions (Creed and Nakhooda 2011; Phelps et al. 2011). This is largely as a result of global disagreements over UNFCCC emissions reduction targets and the lack of clear post-Kyoto emission reduction commitments, which provide uncertain precedents for basing REDD+ heavily on donor support (Phelps et al. 2011, 2012b). Lawmakers in the United States have stalled over climate legislation, and the European Union does not currently plan to integrate REDD+ based carbon credits into its existing emission trading system until after 2020. In fact, enforceable international commitments to reduce emissions through the UNFCCC are a crucial financial condition for full-scale REDD+ implementation, as it will otherwise be an immense challenge to recruit necessary voluntary investment (Phelps et al. 2011).

Even when credible demand for emission reduction credits exists, adequate regulation of market-based finance represents another condition for effective implementation. For example, there is potential for oversupply of forest-based credits in carbon markets that could reduce carbon prices and compromise mechanism function (Hare and Macey 2007; Livengood and Dixon 2009; Phelps et al. 2011). This implies that regulated market supply and a ‘price floor’ for carbon might be necessary to ensure financial sustainability. Similarly, rigorous standards for forest-based carbon credits would be necessary to ensure the reliability of market-based trading. Additionally, long-term demand for forest-based emission credits is also a requisite, although there is a danger that these will be used only as a temporary mitigation approach while developing low-carbon technologies (Piris-Cabezas and Keohane 2008; Streck and Parker 2012). It follows that the role of forestry sector carbon credits could decline if they ceased to be the most economically efficient way of mitigation (Ghazoul et al. 2010a; Phelps et al. 2011).

Fund-based financing also entails an alternative or parallel approach. As in the case of the UNFCCC Green Climate Fund, it can be funded through voluntary commitments from Annex I countries, but could also be supported through mandated contributions from polluting countries and industries. As with markets and public finance, these would be more

robust if based not on year-to-year voluntary support, but on reliable investments to offset emissions in accordance with international commitments. Reliable, long-term Annex I contributions and financial management that provide participants with financial certainty are crucial. Especially in the context of carbon market immaturity and uncertainty about long-term donor support, fund-based finance could ensure reliable and more predictable REDD+ payments (Hare and Macey 2007) and could help circumvent market volatility (see Phelps et al. 2011).

REDD+ financial resilience would also benefit from an expanded approach to ecosystem services, combining or expanding REDD+ payments for carbon emissions reductions with payments for other ecosystem services such as water quality, recreation, biodiversity, erosion control or flood protection (Scholz and Schmidt 2008). Combining multiple financing streams could help to ensure that other services are not overlooked by single-commodity payments, and could potentially increase REDD+ funding. This would be especially helpful in areas with high opportunity costs, where REDD+ might not otherwise be financially competitive (Phelps et al. 2010b).

Crucially, however, resources and donor support for the forestry sector must also address the distribution of (financial) benefits. To date it is not clear how REDD+ funds will be channelled within countries. The UNFCCC is not likely to promulgate rules about how the carbon revenues are to be shared within recipient countries, since this is a matter of subsidiarity (Balderas Torres and Skutsch 2012). There are also strong arguments to suggest that state management of REDD+ finances could fail to fairly distribute financial rewards and benefits from REDD+ (Peskett et al. 2008). For example, a majority of submissions for World Bank financial support of REDD+ have not adequately addressed governance challenges related to benefit sharing (Davis et al. 2009). In cases where REDD+ is implemented on public land, there is a need to design benefit-sharing mechanisms that avoid locally powerful actors from reaping disproportionate benefits (elite capture, Grieg-Gran et al. 2005; McElwee 2012; Corbera and Pascual 2012). This will require empowering local users with the authority and resources to negotiate revenue sharing (Phelps et al. 2010a) as further discussed in section 4.3.

4.3 Forest governance and institutions: donor engagement with multiple levels of governance

In the context of many tropical developing countries, forest governance reform is a condition for improving sustainable forest management and for maximizing associated foreign aid (Ostrom 2010; Agrawal et al. 2008; Kanowski et al. 2011; Nasi et al. 2011). Yet, Davis et al. (2009) note that a review of 25 of the Forest Carbon Partnership Facility REDD country participants revealed that their proposals lacked adequate conservation of governance factors related to law enforcement, land tenure clarity, benefit-sharing mechanisms or transparency and accountability of forest monitoring systems, potentially limiting forest protection (Bisson et al. 2003) and related emissions reductions (Phelps et al. 2010a), as well as negatively affecting forest-dependent communities. Indeed, there are considerable and diverse risks associated with overlooking the governance complexities (Phelps et al. 2010a, 2010b; Nagendra and Ostrom 2012; Korhonen-Kurki et al. 2012).

‘Good’ governance may be a condition for some types of funding, as some private sector and donor actors may both lack confidence to investment in states with weak governance structures (Balderas Torres and Skutsck 2012), which could jeopardize forestry sector finance

(see Karsenty and Ongolo 2011). While much ODA and forestry sector financing occur through national-level negotiations, we highlight the importance of donors engaging with the forestry sector through multi-level interventions that recognize the complexity of forest governance systems and need to engage with actors beyond the national-level (Nagendra and Ostrom 2012).

REDD+ necessitates collaboration among the diverse stakeholders with interests in the forestry sector, and large-scale improvements to forestry sector conservation and management cannot be addressed through interventions at any single level of governance (Nagendra and Ostrom 2012). International donors, whose engagement is often at the national-level, are challenged to consider forestry sector issues, processes and decisions at other scales. For example, there is scope for donor engagement at the project level, especially in the context of a 'nested' REDD+ approach that allows for site-based and sub-national funding and implementation (Angelsen 2008). Such an approach has considerable support,[2] yet also requires strategic engagement to ensure regional and national scaling-up and integration. Indeed, sub-national REDD+ efforts highlight the polycentric nature of REDD+ governance, and the need to accommodate stake, regional and community-based management (Corbera et al. 2010).

Similarly, REDD+ interventions have the potential to increase centralized management of forest resources, at the cost of local management rights (Phelps et al. 2010a; Sandbrook et al. 2010; Kanowski et al. 2011). In addition, REDD+ implementation might place additional demands on national forest managers, favouring a more centralized system of forest control for monitoring and coordination (Phelps et al. 2010a). This may seriously affect indigenous and forest-dependent people's rights over their traditional lands and resources (Brown et al. 2008; Schroeder 2010; Kanowski et al. 2011), increasing tenure insecurity (Cotula and Myers 2009). As such, ensuring that REDD+ reforms address issues such as local land tenure, resource access, autonomy or participation and benefit distribution are essential conditions for consideration among donors.

4.4 Considering multiple performance trade-offs

Finance mechanisms for REDD+ and their associated governance and institutional architecture strongly condition potential trade-offs associated with forest management decisions. To date, REDD+ donor financing is largely focused on forests' carbon sequestration, which has largely defined resource management priorities. Nevertheless, REDD+ has the potential to enhance other co-benefits such us biodiversity conservation and other ecosystem services, poverty alleviation and adaptive capacities. However, such co-benefits seldom occur automatically. We highlight here the trade-offs between carbon sequestration and (i) biodiversity conservation; (ii) economic and human development; and (iii) climate change adaptation. These trade-offs need to be candidly addressed as a condition for REDD+ implementation to avoid undesirable outcomes, maximize donor resources, and to ensure the permanence of conservation actions (Stickler et al. 2009; Kanowski et al. 2011; Blom et al. 2010; Ghazoul et al. 2010b; Harvey et al. 2010; Hirsch et al. 2010; Phelps et al. 2012).

[2] For example, de Gryzde and Durschinger (2010); Swickard and Carnahan (2010) in Balderas Torres and Skutsch 2012).

4.4.1 Biodiversity conservation

While some authors recognize REDD+ potential to jointly address declines in forest-based carbon storage and biodiversity (Miles and Kapos 2008; Venter et al. 2009), approaches for linking biodiversity conservation to climate change mitigation strategies are not straightforward and REDD+ mechanisms do not guarantee biodiversity co-benefits automatically (Venter et al. 2009; Phelps et al. 2012). In fact, one important risk is that REDD+ finance could overlook support for biodiversity conservation priority sites with low carbon stocks (Grainger et al. 2009; Miles and Kapos 2008; Phelps et al. 2012). Moreover, in the definition of 'forests' REDD+ does not distinguish between natural forests and plantations, and therefore could create incentives for forest degradation in favour of less biodiversity-rich strategies associated with commercial tree planting (Sasaki and Putz 2009; Lindenmayer et al. 2012). Additionally, REDD+ policies could displace deforestation pressures (leakage) into other, unprotected high-biodiversity forests, both within the same country (Angelsen et al. 2009; Harvey et al. 2010) and internationally (Mudiyarso et al. 2008; Strassburg et al. 2009).

REDD+ planning has focused predominantly on identifying high carbon and high deforestation countries like Indonesia, though there is a need for much broader country participation in order to account for a greater range of emissions sources, avoid international leakage and account for future pressures on forests (Mudiyarso et al. 2008; Strassburg et al. 2009; TCG 2008; IWG-IFR 2009). In this sense, not all countries are ensured participation in a REDD mechanism, because of low forest cover, low deforestation rates and high opportunity costs (Miles and Kapos 2008; Venter et al. 2009).

Since donors are primarily interested in economies of scale to tackle global-warming cost effectively (Butler and Laurance 2008), some large tropical areas within specific countries that account for a significant share of global tropical deforestation (e.g., Brazil, Peru, Indonesia, and the Democratic Republic of Congo) become key REDD+ targets. But as Campell (2009) points out, REDD+ initiatives could focus beyond the humid tropics to target other biodiversity hotspots even if REDD+ donors might need to pay a premium price for carbon credits (Venter et al. 2009). If biodiversity co-benefits were to be integrated into REDD+, financial backers, including donors, would need to acknowledge the degree to which reduced carbon benefits would be acceptable in order to enhance biodiversity outcomes (Venter et al 2009; Minteer and Miller 2011). Even where biodiversity co-benefits are possible, unless the additional costs of biodiversity conservation, monitoring and reporting are assumed into REDD, carbon-biodiversity trade-offs may persist (Hirsch et al. 2010; Phelps et al. 2012b).

4.4.2 Economic and human development

REDD+ involves a number of development trade-offs, both in terms of larger-scale economic trade-offs (see Box 4), as well as a range of economic and non-economic human development trade-offs (Box 5). Both types of trade-offs relate to forgone activities in order to allow for forest conservation, as REDD+ interventions often involve restrictions on forest access, use and harvest, thereby involving foregone revenues (e.g., from timber, crops and livestock) and/or limiting subsistence and smaller-scale resource use (Shepherd 2004; Gazoul et al. 2010a). Economic trade-offs at both scales are of immediate interest to donors because they shape the scale of financing necessary to offset alternative land uses.

Box 4: REDD+ and large-scale economic trade-offs

Restrictions on resource use associated with REDD+ policies inherently involve economic trade-offs, which are significant within the industrial timber sector and related and down-stream industries (Ghazoul et al. *20*10a). REDD+ must be economically competitive with these types of high-value alternative land uses, in order to incentivize conservation. For example, opportunity costs associated with the paper and pulp industry in the Indonesian province of Riau have been estimated at ~US$5 billion in 2006 (ibid.). Although the figure is debatable, it provides an indication of the relative value of industrial forestry extraction when compared to forecasts of REDD+ financing for the entire country of Indonesia (US$3.8–15 billion per year). Furthermore, the forestry sector in Indonesia directly employs around 350,000 people and about 3.1 million people in broader forestry-related businesses (ibid.). The Malaysia's oil palm industry offers a comparable example. The industry contributes 5-6 per cent of Malaysian GDP and provides direct employment for 570,000 people while employing 830,000 people in downstream activities. It generates US$10.1 billion annually in foreign exchange, which has been essential for human development associated with basic service provision such as piped water, electricity, communications, roads, schools and healthcare (MPOC 2012).

Source: Compiled by the authors.

Perceived restrictions that conflict with powerful national economic interests and development agendas are likely to face delays and opposition to REDD+. Similarly, REDD+ programmes that conflict with local livelihoods and human development goals can face opposition, thereby potentially compromising the efficiency and effectiveness of foreign aid through REDD+ (Corbera and Pascual 2012; Beymer-Farris and Bassett 2012). Some studies address how REDD+ can potentially involve trade-offs in local agricultural production, food security, resource access and local hardships (McElwee 2012; Stickler et al. 2009), although there remains considerable debate over whether REDD+ should also be pro-poor and make active contributions to rural livelihoods, or merely be designed to not harm the poor. This decision is likely to depend on others' willingness to pay for additional social benefits—including the willingness of international donors.

4.4.3 Adaptation to climate change

Climate change policies have tended to pay disproportionately more attention to mitigation than to adaptation, although adaptation is receiving increasing political attention (Pielke et al. 2007; Jerneck and Olsson 2008; Parry et al. 2009). However, it was not until the 2010 UNFCCC 16th Conference of Parties where countries reached the first global agreement on adaptation, including foreign aid commitments. But that agreement still overlooked the role of forest ecosystems in enhancing social and ecological resilience through the provisioning of key ecosystems services (Locatelli et al. 2011).

Successful long-term forest management requires that ecosystems are able to adapt to climate change (ibid.). Communities and industries that depend on forest resources also face pressures to adapt to climate change. Thus managing for climate change adaptation potentially adds a new critical dimension of forest management. Joint mitigation-adaptation efforts in forested landscapes can be illustrated through mangrove restoration, which can simultaneously contribute to carbon stocks (Donato et al. 2011), while also protecting coastal areas from erosion and storm surges especially associated with climate change and accelerated sea level rise (Das and Vincent 2009; Turner et al. 2009). Traditional forest-based agricultural systems may also successfully link adaptation and mitigation (see Box 5).

Box 5: REDD+ and human development trade-offs in the context of swidden agriculture

Swiddening, also known as shifting cultivation, is an extensive agricultural system that involves rotating amongst forest plots—clearing forestland using fire, cultivation, fallow and a return to previously farmed sites. Importantly, it is a land use heavily targeted for transformation under a number of REDD+ policies: REDD+ policymakers across the tropics are proposing that REDD+ carbon finance can be used to provide incentives for swidden farmers to do a transition to other land uses (Ziegler et al. 2012; Pirard and Belna 2012). However, this type of cultivation is the main source of livelihood or an important source of supplementary income for millions of people worldwide (Cramb et al. 2009; Mertz et al. 2009). Although the proposed land use shifts have the potential to increase food security and farm incomes, it equally exemplifies how climate change mitigation efforts may compromise communities' adaptive capacity. A recent meta-analysis of more than 250 studies supports a reassessment of policies that encourage land-cover conversion away from (especially long-fallow) swidden systems (Ziegler et al. 2012). There is little evidence to suggest that transitions from swidden agriculture to most other land uses will directly or reliably produce positive carbon gains. On the contrary, many transitions—including the replacement of various types of swidden agriculture with oil palm, rubber, or some types of agroforestry systems—may negatively impact other ecosystem services, food security, and local livelihoods, such that the entire carbon and non-carbon benefits stream should also be taken into account before prescribing transition with ambiguous carbon benefits (ibid.). While extensive agriculture might not necessarily be a viable management strategy in all contexts or for the bulk of global food production (Ghazoul et al. 2010b), long-fallow rotations within swidden agriculture can serve as effective stores of carbon while preserving traditional livelihoods and maintaining adaptive capacity (Ziegler et al. 2012). Notably, REDD+ policies should not preclude the option of maintaining or rehabilitating traditional, intermediate and long-fallow swidden and agroforestry systems within the broader forest landscape. From a long-term carbon perspective, intermediate and long-fallow swidden systems could conceivably represent optimal land-use options in some situations (Ziegler et al 2011; 2012).

Source: Compiled by the authors, based on material cited above.

5 What is scalable?

5.1 Financial and geographic scaling-up

This section considers how REDD+ as a foreign aid instrument for SFM is serving to mainstream and scale-up lessons learned from previous forest conservation instruments. We specifically consider how this scaling-up process, while technologically possible, represents a complex, political process that involves stakeholders at multiple levels of governance. We focus on the role of donors in identifying priorities within the forestry sector and helping to mediate decisionmaking.

REDD+ represents not only a dramatic and unprecedented increase in foreign aid for the forestry sector (section 3.3), but a geographic scaling-up when compared with previous forestry sector initiatives. Crucially, REDD+ implementation generally involves highly centralized approach to forest management policy, as the mechanism requires national-level carbon accounting to demonstrate net emissions reductions and avoid leakage[3] (Phelps et al. 2010a). As a result, REDD+ is serving to mainstream landscape and national-level land use

[3] Leakage is when interventions to reduce deforestation or degradation at one site simply displace pressures elsewhere and increase emissions elsewhere.

planning and cross-sectoral planning (e.g., across forestry sector, agriculture, transportation sectors) (Wunder 2008; CBD 2010; Phelps et al. 2011). Multilateral initiatives such as the FCPF are supporting forest conservation efforts in about 40 developing countries to prepare REDD+ national strategies by 2015, and to conduct landscape-level planning to target interventions and ensure policy harmonization. This scaling-up extends beyond the national level and also includes international cooperation to reduce international leakage. In fact, dozens of tropical developing countries are planning or implementing REDD+ activities, most supported by international public finance (see Kshatriya and Sills 2010; VRD 2011). This national and international-level nature of current forest sustainability initiatives represents a much larger scaling of forest sustainability initiatives than traditionally represented by a project or site-based approach to conservation and forest management.

In recognition of the extraordinary challenges associated with this broadened scope (see section 4.3), a bulk of ODA for REDD+, including Norway's bilateral support to tropical developing countries, has been targeted towards capacity building, early planning efforts, and demonstration activities with an aim to scaling-up (Creed and Nakhooda 2011). Indeed, many existing national REDD+ strategies include explicit plans for scaling-up from local REDD+ pilot projects to regional and national-level forestry sector reforms (e.g., Philippines, PNRPS 2010).

5.2 Scalability and decision-making

However, not all of the relevant stakeholders will perceive efforts to significantly scale-up SFM and sustainability principles across sectors, landscapes and countries in the same way. We have addressed key considerations for effective donor engagement within the forestry sector in terms of mechanism financing conditions, governance and institutional conditions, and in terms of acknowledging social-ecological trade-offs (Figure 1). Additionally, there are considerable disagreements among stakeholders regarding mechanism design and financing (McDermott et al. 2012; Korhonen-Kurki et al. 2012; Phelps et al. 2012a). Moreover, PES schemes such as REDD+ can have different impacts on different stakeholders, with particular potential to negatively harm local service providers (Pagiola et al. 2005). In fact, the cascading socioeconomic effects of REDD+ policies and the diversity of associated stakeholders make REDD+ policy development an especially complex case of environmental governance (Ghazoul et al. 2010a; Corbera and Schroeder 2011; McDermott et al. 2012; Nagendra and Ostrom 2012; Korhonen-Kurki et al. 2012). Donors have a significant role to play in identifying and negotiating priorities and helping to mediate decisionmaking.

REDD+ policy development is generally centred on the formal UNFCCC process, in which a future global REDD+ mechanism remains under negotiation. However, REDD+ policies are simultaneously being formed at other multiple levels. We can identify eight levels at which stakeholders are engaging with SFM and REDD+ policies, and which stand to shape the outcomes of foreign aid for climate change. These stakeholders range from actors operating principally within international level negotiations to local implementers and resource user (Box 6 below).

Obviously many of these levels overlap, adding complexity to REDD+ stakeholder architecture. For instance, parties engaged in bi- and multilateral REDD+ initiatives are also active in UNFCCC processes; individual REDD+ sites fit into national-level carbon

Box 6. Eight levels of stakeholders engaging in SFM and REDD+

(i) Non-UNFCCC multilateral initiatives (e.g., Forest Carbon Partnership Facility) and bilateral initiatives (e.g., Norway-Indonesia) are supporting country partners to develop national REDD+ policies, pilot projects and 'readiness' in preparation to engage with a future REDD+ mechanism.

(ii) Participating governments are shaping global policy while domestically establishing pilot projects, developing and beginning to implement national REDD+ strategies.

(iii) Local and regional government actors are engaging with national and local counterparts, to implement national strategies and, in some cases to establish more autonomous local and regional initiatives such as in Aceh (Indonesia).

(iv) A wide range of civil society initiatives are contributing to, contesting and negotiating REDD+ policies at multiple scales (e.g., Friends of the Earth Indonesia).

(v) The private sector and industry actors are both funding and independently developing site-based REDD+ projects for voluntary carbon markets and in anticipation of emissions caps and future carbon trading (e.g., Carbon Conservation).

(vi) Third party private and non-government organizations are setting up verification schemes and standards for REDD+ (e.g., Community, Conservation and Biodiversity Alliance)

(vii) Actors within academia, NGOs, government agencies and the private sector are developing carbon quantification and monitoring technologies to help operationalize REDD+.

(viii) NGO's and community groups are developing site-specific REDD+ projects (e.g., Cambodia's Oddar Meanchey REDD project), but in other cases also struggling against externally-imposed initiatives (e.g., Rufiji Delta in Tanzania).

Source: Compiled by the authors.

accounting and REDD+ planning; local civil society actors are influencing global negotiations; third party verifications schemes will run in parallel with government standards and international safeguards.

The ways in which REDD+ will address financial needs and deliver financial flows are dependent on which actors are able to define mechanism priorities and the associated trade-offs, which in turn are shaped by the interplay among diverse stakeholders (Corbera and Schroeder 2011; McDermott et al. 2012; Ribot and Larson 2012). In fact, the way in which SFM objectives are defined, prioritized and scaled-up depends largely on such interplay.

Among key stakeholders' interests, we specifically highlight the roles of local resource users and Annex I donor nations in defining REDD+ objectives and designing the future financial mechanism, notably because (i) these groups represent opposite ends of the payment-for-ecosystems relationship, and reflect differences in scale: local versus global; (ii) local resource users will be among the most directly and heavily affected by REDD+ policies, yet are among the most marginalized in the REDD+ policy processes (Thompson et al. 2011; Ribot and Larson 2012), and (iii) Annex I nations (donors) are among the best positioned stakeholders to help ensure that the identified challenges are meaningfully addressed and that foreign aid is effectively leveraged as well as being responsible for the bulk of carbon emissions and investments into REDD+ and its policy development.

Annex I countries are central to the REDD+ policy development and financing processes, not only through the UNFCCC process, but via the various multilateral processes and through direct bilateral engagement with forested countries (Agrawal et al. 2011; McDermott et al. 2012). The UNFCCC negotiations may eventually result in new agreements on international emission abatement targets. This would vastly extend to role of Annex I finance, as industrialized nations purchase carbon credits in a future market, or finance a carbon fund in

order to finance REDD+ based emissions reductions. However, as in any PES scheme, service beneficiaries exert considerable power because they help to define terms of purchase/finance, and are likely to approach REDD+ with considerable expectations (see Clements 2010).

Likewise, as Creed and Nakhooda (2011) suggest, some donor nations have already demonstrated preference for bilateral finance arrangements because they allow them to exert even greater control over how REDD+ finance is spent. It potentially also allows financers to impose conditions that shape how REDD+ addresses issues such as resource governance, tenure reforms, equitable benefit distribution, integration of biodiversity into REDD+ planning, and the monitoring of social and environmental safeguards (Phelps et al. 2010a; Phelps et al. 2011). For example, Norway has targeted foreign aid towards Indonesia in the interests of maximizing investments to reduce emissions, but has also placed conditions on its financing, including a prioritization of biodiversity conservation alongside emissions reductions.

At the opposite end of the international PES relationship, there are serious concerns that REDD+ policies could deny local resource users and traditional landholders their territories and livelihoods, especially because these actors generally lack commensurate agency within REDD+ decisionmaking (Brown et al. 2008; IIPFCC 2009; Schroeder 2010; Thomson et al. 2011; Lyster 2011; Peskett et al. 2008). Many existing REDD+ decision-making processes are also characterized by 'deep inequities', notably biased against local forest resource users, whose participation is heavily limited by 'class, ethnic and other social inequities and economic hurdles' (Ribot and Larson 2012). A rapid scaling-up of efforts in the forestry sector could profoundly impact on dependent communities, potentially much more than a site-based approach. Notably, a scaled-up, national-level approach to REDD+ implementation has the potential to centralize control over forest resources, reducing local decisionmaking (Phelps et al. 2010a; Sandbrook et al. 2010).

This clearly illustrates the trade-offs and multi-scalar nature inherent to REDD+ decisions. As discussed, while many of the benefits of tropical forest conservation are global, including climate change mitigation benefits, the cost of protecting forests are largely borne by local communities, especially those that depend on forest resources (Balmford and Whitten 2003; Naidoo et al. 2008). The 'passive costs' of conservation can have disproportionate impacts on local communities (Balmford and Witten 2003; e.g., Pagiola et al. 2005), which further highlights the importance of equitable distribution and engaging local actors in decisionmaking. A similar disparity of scales is evident when comparing climate change mitigation and adaptation, as mitigation interests and interventions are generally global in nature, while adaptation concerns are more local (Locatelli et al. 2011).

Broadening recognition of the local social implications of REDD+ implementation has given rise to mounting social safeguards within the UNFCCC process, a number of participating countries and third party groups (Rutt 2012). However, safeguards within the UNFCCC have been criticized as inadequate because they are voluntary and unenforceable, and because even if local stakeholders have the right to benefit from REDD+, they may lack the ability to benefit as a result of such inadequate engagement and representation (Ribot and Larson 2012).

Industrialized nations, as donors and potentially as buyers of emissions credits, are positioned to continue to shape the ways in which the voices of service providers—local communities responsible for forest resource conservation and management on the ground—are heard

within international and national policy decisions. Further addressing the relationships between international donors/service buyers and local service providers, and differences and trade-offs in what they consider priorities within REDD+ (e.g., carbon trade-offs with human development goals) remains a key challenge. Leveraging effective foreign aid through REDD+ critically relies on matching interests at these two scales.

6 Concluding remarks

This position paper identifies key conditions for maximizing the effectiveness of foreign aid into the forestry sector, particularly in the context of climate change mitigation and balancing multiple objectives via SFM. It has focused on the potential for transformational changes as a result of the new, large-scale donor-based climate change finance for REDD+ policies.

The paper identifies the potential for SFM principles to help bolster sustainability with the forestry sector, including climate change mitigation and adaptation. It draws on historical developing country experiences with sustainable forest management and conservation to explore how contemporary foreign aid can serve to promote greater sustainability within tropical forests management. Moreover, it explores how the scale and design of new REDD+ policies make the initiative unique from previous forestry sector experiences, with the potential to overcoming barriers that have historically hindered forest conservation and improved management.

Through a conceptual framework of the intertwined financial conditions, governance conditions, and policy trade-offs that shape REDD+, the paper discusses how greenhouse gas emissions mitigation objectives need to be harmonized with a diversity of other forestry sector objectives, embodied by the United Nations SFM principles. We concur with a broadening consensus that REDD+ as a foreign aid instrument should contribute to biodiversity conservation, sustainable rural development and improved forest management. However, we also stress that win-win outcomes for carbon emissions, human development and other ecosystem services are not automatic, and involve interplay of complex finance and governance architecture.

We have also specifically examined how REDD+ financing, catalysed by official development aid, has the potential to move beyond previous SFM efforts. Likewise we warn that the mechanism still faces uncertainty over the long-term sustainability of financing. This drives us to highlight that financing for the forestry sector is not a stand-alone issue that can be addressed independently of governance considerations and without proper acknowledgement of a range of trade-offs associated with REDD+.

We note that leveraging and materializing sufficient foreign aid for the sustainability of the forestry sector remains a major challenge. Notwithstanding the need to engage with different types of finance (public and private, market and non-market-based), there are particular political challenges associated with mandating the emissions reductions needed to effectively generate REDD+ finance that is both sustainable and resilient. This is critically associated with the complexity of multiple stakeholder interests, and the role of Annex I nations in shaping REDD+ policy. Also, the role of ODA in leveraging REDD+ finance must be taken consciously, as different options have the potential to compromise the scarce existing development aid.

We have also emphasized international donors' role, via engagement with participating countries, foreign aid and conditionality, in not only promoting carbon conservation and enhancement, but also addressing many of the underlying governance issues and policy trade-offs. In this regard, we suggest that within a polycentric approach to governance, livelihood impacts and local legitimacy of REDD+ must be understood and considered within REDD+ negotiations and planning.

Given the crucial role of forests to both climate change mitigation and adaptation, REDD+ policy development and the increase in foreign aid/ODA for the forestry sector is promising but confronts complex future challenges. Hence, however novel, we stress that these initiatives need to draw lessons and best practices from decades of donor investment into developing tropical forests. This includes recognition of the financing conditions and governance complexities.

Last but not least, while donor support for the forestry sector is heavily focused on carbon, REDD+ efforts need to consider the broader diversity of services provide by forest ecosystems, and the profound impacts forest reform will have on national development and local-level livelihoods, particularly among forest-dependent local communities.

Annex 1

Table A1: Financial flows in REDD+ (in US$ million)

Fund	Pledged[/a]	Deposited[/b]	Approved[/c]	Disbursed[/d]	Donors	Projects
Amazon Fund						
	1032.22	57.49	141.59	42.48	– Germany – Norway – Petroleo Brasileiro S.A. Petrobras	– Brazil
Congo Basin Forest Fund (CBFF)						
	165.0	165.0	75.05	12.1	– Norway – UK	– Burundi – Cameroun – CAR – Chad – Guinea Equatoriale – Congo DRC – Gabon – Congo – Rwanda – Sao Tomas et Principe – Cameroon – CAR
Forest Carbon Partnership Facility - Carbon Fund (FCPF-CF)						
	204.5	179.3	0.57	0.20	– BP – CDC Climate – EC – Germany – IFCI – Norway – Switzerland – TNC – United Kingdom – United States	– Global
Forest Carbon Partnership Facility - Readiness Fund (FCPF-RF)						
	229.6	229.6	27.24	9.14	– AFD (France) – Canada – Denmark – European Commission – Finland – Germany International Forest Carbon Initiative (IFCI) – Italy – Japan – Netherlands – Norway's International Climate and Forest Initiative – Spain – Switzerland – UK's International Climate Fund – United States	– Cameroon – Colombia – Congo DRC – Costa Rica – El Salvador – Ethiopia – Ghana – Indonesia – Kenya – Lao – Liberia – Nepal – Nicaragua – Congo – Uganda – Vanuatu

…/.

Table A1: Financial flows in REDD+ (in US$ million) (con't)

Fund	Pledged [/a]	Deposited	Approved	Disbursed	Donors	Projects
Forest Investment Programme (FIP)						
	644	459	50.96	3.18	– Denmark – International Forest Carbon Initiative (IFCI) – Japan's Fast Start Finance – Norway's International – Climate and Forest Initiative – Spain – UK's International Climate Fund – United States	– Brazil – Indonesia
Global Climate Change Alliance (GCCA)						
	226.12	224. 6	24. 70	0.00	– Cyprus – Czech Republic – Denmark – EC Fast Start Funding – European Community – European Development Fund – International Forest Carbon Initiative (IFCI) – Ireland – Japan's Fast Start Finance – Norway's International Climate and Forest Initiative – Spain – Sweden – UK's International Climate Fund – United States	– Bangladesh – Belize – Cambodia – Ethiopia – GCCA Support Facility – Guyana – Intra ACP – Jamaica – Maldives – Mali – Mauritius – Mozambique – Nepal – Pacific Region – Rwanda – Seychelles – Solomon Islands – Tanzania
Indonesia Climate Change Trust Fund (ICCTF)						
	18.61	8.81	1.25	1.19	– Australia – Denmark – International Forest Carbon Initiative (IFCI) – Japan's Fast Start Finance – Norway's International Climate and Forest Initiative – Spain – Sweden – UK's International Climate Fund – United Kingdom – United States	– Indonesia

…/.

Table A1: Financial flows in REDD+ (in US$ million) (con't)

Fund	Pledged [a/]	Deposited	Approved	Disbursed	Donors	Projects
UN-REDD						
	119.9	118.9	117.56	95.36	– Denmark – Japan's Fast Start Finance – Norway's International Climate and Forest Initiative – Spain	– Bolivia – Cambodia – Congo DRC – Indonesia – Nigeria – Panama – Papua New Guinea – Paraguay – Philippines – Solomon Islands – Tanzania – United Nations – Viet Nam – Zambia

Note: [a/] Pledges: represent verbal or signed commitments from donors to provide financial support for a particular fund. All pledges are cumulative.

[b/] Deposits: represent the funds that have been transferred from the donor into the account(s) of the fund. Also known as committed funds. All deposits are cumulative.

[c/] Approved: represents funds that have been officially approved and earmarked to a specific project or programme. All approvals on figures are cumulative.

[d/] Disbursed: represents those funds that have been spent, either through administrative means or directly to an implementation programme or project, with proof of spend. All disbursements on figures are cumulative.

Source: Compiled by authors based on the following sources: UN-REDD data from www.mptf.undp.org/factsheet/fund/CCF00; other facts from www.climatefundsupdate.org/data and UN-REDD. There is also information on the countries of red funding destiny with approved funding and figures of each countries amount. All data in the table refer to REDD+ funds: defined in the database as countries' efforts to reduce emissions from deforestation and forest degradation and foster conservation sustainable management of forests and enhancement of forest carbon stocks (FAO and UNFCCC 2012).

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