

Stimulating Interim Demand for REDD+ Emission Reductions: The Need for a Strategic Intervention from 2015 to 2020

About the Interim Forest Finance project (IFF)

The Interim Forest Finance (IFF) project is a collaborative initiative of the Global Canopy Programme (GCP), the Amazon Environmental Research Institute (IPAM), Fauna & Flora International (FFI), the UNEP Finance Initiative (UNEP FI), and the United Nations Office for REDD+ Coordination in Indonesia (UNORCID). The IFF project advocates a strategic intervention by donor country and tropical forest country governments, and public financial institutions, to scale up public and private sector demand for REDD+ emission reductions, in the interim period between 2015 and 2020.

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The Global Canopy Programme (GCP) is a tropical forest think tank working to demonstrate the scientific, political and business case for safeguarding forests as natural capital that underpins water, food, energy, health and climate security for all.

GCP works through its international networks – of forest communities, science experts, policymakers, and finance and corporate leaders – to gather evidence, spark insight, and catalyse action to halt forest loss and improve human livelihoods dependent on forests. The Global Canopy Programme is a registered UK charity, number 1089110. www.globalcanopy.org

The Amazon Environmental Research Institute (IPAM)

The Amazon Environmental Research Institute (IPAM) is a non-profit, independent research, policy and outreach organization that has worked over the past 16 years towards achieving sustainable development in the Amazon region in a way that reconciles people's economic aspirations and social justice with the maintenance of the functional integrity of tropical forest landscapes. www.ipam.org.br

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UNORCID (United Nations Office for REDD+ Coordination in Indonesia) is the UN System focal point for REDD+ in Indonesia, and serves as a coordinating body and knowledge institution. Building on the competitive advantage and domain expertise of eight UN Partner Agencies (UNDP, UNOPS, ILO, FAO, UNEP, UNESCO, WFP, and UNODC) and numerous civil society partners, UNORCID provides decision-makers and stakeholders at the national through local levels with relevant information and tools to support successful REDD+ implementation. UNORCID was inaugurated on 17 November 2011 by the UN Secretary General, following the signing of a Memorandum of Understanding (MoU) between the Republic of Indonesia and the UN System in September 2011. www.unorcid.org

Executive Summary

Immediate action is needed to stimulate demand for REDD+ emission reductions. There is currently no source of demand that will pay for medium to long-term emission reductions from REDD+ in the period between 2015 and 2020¹ ('the interim period'), and do so at the scale needed to meet REDD+ emissions reduction targets in tropical forest countries.

This problem seriously threatens the successful implementation of REDD+, because without interim demand, there will be little or no incentive for forest countries to participate and redirect resources towards REDD+, or for the private sector to invest.

In order to stimulate demand for REDD+ emission reductions, the right incentives need to be in place for tropical forest country governments and the private sector, who can then commit the necessary financial, human and political capital.

The Interim Forest Finance (IFF) project advocates a strategic intervention by donor country and tropical forest country governments, and public financial institutions, to scale up demand for REDD+ emission reductions in the interim period. It would achieve this by using public sector funding to leverage considerably more private sector investment.

This report highlights the following key points:

There is a huge gap between supply and demand

Basic calculations show that, between 2015 and 2020, projected supply of emission reductions from REDD+ and/or other forest and land-based activities is between 3 and 39 times larger than potential total demand. As of January 2014, the sources of potential demand for the interim period include the California Emissions Trading Scheme, FCPF Carbon Fund, BioCarbon Fund, KfW REDD+ Early Movers Programme and the voluntary market².

¹ This report assumes that in 2020 a global climate agreement will have been made and will be operational. The time between 2015 and 2020 is referred to as the 'interim period'.

² Other sources of demand may come online later in the interim period, such as the Norway-Indonesia Letter of Intent. See Table 1.

2 Early movers could exhaust current funding

For example, if the entire potential demand for international REDD+ offset credits from the California ETS between 2015 and 2020 were spent on compensating the State of Acre for their REDD+ emission reductions, it would pay for only around 70% of these emission reductions. The FCPF Carbon Fund, if it bought the remainder, would also exhaust its entire funds on purchasing emission reductions from Acre. The remaining fraction of total potential demand from the other sources mentioned above would need to cover emission reductions generated by all other early mover forest countries/states worldwide, during the interim period. It is unlikely that this is sufficient capital, or a strong enough economic incentive, to ensure that forest countries continue to change their development pathways.

3 Funding needs to be scaled up at least to the magnitude of the Fast Start Finance pledges

In Copenhagen in December 2009, Annex I countries pledged approximately US\$4.5 bn for REDD+ in the Fast Start Finance (FSF) period from 2010 to 2012 (ISU, 2011)³. According to the Voluntary REDD+ Database, the five major donor countries – the UK, the USA, Norway, Germany and Australia – pledged around US\$3 bn for REDD+. Assuming that a substantial proportion of emission reductions from forest and land-use activities in tropical forest countries are paid for through a REDD+ trading mechanism, demand must be scaled up to a level that results in a dollar value of primary market transactions between buyers and sellers (referred to as a 'transaction value') of between US\$4 bn and US\$48 bn in the interim period. Donor country governments need to pledge capital at least similar in size to the FSF funding in order to stimulate this level of demand. Such a pledge would also build on the financial, human and political capital already committed in the FSF period.

³ It should be noted here that numbers might have been revised since December 2009. According to DFID (2012), the overall pledge for REDD+ in the FSF period increased to US\$6.1 bn.

4 Funding must be scaled up rapidly

Although the absorptive capacity of some tropical forest countries for REDD+ funding may be limited, without a financial incentive in the interim period, tropical forest countries and the private sector have little motivation to invest the necessary political, human and financial capital in REDD+. Funding therefore has to be scaled up rapidly, to provide incentives in the fast-approaching interim period. This also requires the use of a 'light' institutional structure to manage the funds, avoiding stagnation of capital.

5 Financial incentives need to be clear and long-term

A performance-based financial incentive, providing clear price signals to all counter-parties, will improve the risk-return profile of REDD+ investments, leverage private sector capital, match the goals of global REDD+ policy with the scale of funding needed to achieve those goals, and retain the political momentum of forest country governments. Emissions Reduction Purchase Agreements, options contracts and price floors could be used to provide this incentive, against which financial capital could then be raised from the private sector.

6 The strategic intervention could build on existing institutions and examples

Significant effort has gone into building momentum in the FSF period, and beyond, e.g. the FCPF Carbon Fund, and designing the Green Climate Fund as a conduit for REDD+ results-based finance. Examples from other sectors, such as the Public-Private Partnership (PPP) created under the Global Alliance for Vaccination and Immunisation (GAVI), which makes long-term financial commitments to increase the immunisation of children in its partner countries, also demonstrates the successful use of international partnerships to scale up demand. Building on these institutions and examples will help to create or adapt institutions needed to scale-up demand for REDD+ emission reductions.

7 A strategic intervention would help maintain political momentum in REDD+

Whether funds such as the FCPF Carbon Fund or the BioCarbon Fund are scaled up, or whether it is a new international Public Private Partnership similar to GAVI, a pilot case for the Green Climate Fund, or channelled through national level climate funds, an interim strategic intervention to stimulate demand would help maintain political momentum behind REDD+.



Introduction

The need to scale up demand now

There is currently no source of demand that will pay for medium to long-term REDD+ emission reductions in the period between 2015 and 2020 ('the interim period') at the scale needed to meet emission reduction targets in tropical forest countries, or international deforestation reduction targets. Immediate action is needed to stimulate demand for REDD+ emission reductions, and to obtain recognition for early action on REDD+ as part of a post-2020 global climate change agreement.

This lack of interim demand seriously threatens the successful implementation of REDD+, because without it, there will be little incentive for forest countries to participate and redirect national resources for REDD+, or for the private sector to invest in activities related to REDD+.

In order to stimulate demand for REDD+ emission reductions, the right incentives need to be in place for forest country governments and the private sector, who can then commit the necessary financial, human and political capital.

The Interim Forest Finance (IFF) project

The Interim Forest Finance (IFF) project advocates a strategic intervention by donor country and tropical forest country governments, and public financial institutions, to scale up demand for REDD+ emission reductions and accelerate financial flows for tropical forests in the interim period.

The first phase of the IFF project is composed of desk-based research and stakeholder consultations. The second phase is a campaign to secure an agreement from donor country governments, forest country governments, and public financial institutions on the need to scale up demand, and then to facilitate the creation of a strategic intervention to scale up demand in the interim period.

This report

In the sections outlined below, this report explains the supply-demand gap in the interim period, and explores how it could be addressed by stimulating the public and private sector demand for REDD+ emission reductions in the interim period.

Lack of demand: What are the risks? explains why interim demand is so important for the future of REDD+: it will affect forest country and private sector motivation to participate and/or invest in, or redirect resources towards, REDD+.

REDD+ supply and demand: How big is the gap? defines the problem. It provides an overview of all potential sources of demand for REDD+ emission reductions from the voluntary and compliance markets and other non-market sources. It estimates the total projected demand for REDD+ emission reductions up to 2020, and reveals the order of magnitude difference between the supply needed if tropical forest countries reduce annual deforestation levels by 50% by 2020, and the total potential demand up to 2020.

Forest and land-use activities under a strategic intervention outlines the scope of land use and forest activities that could be considered in the strategic intervention. The suggested approach is grounded in the emerging school of thought that REDD+ exists within the context of other land use and forest activities. The international frameworks of Land Use, Land Use Change and Forestry (LULUCF) and REDD+ are explained, as well as the need to exploit links between the two.

How could a strategic intervention help? outlines the characteristics of the strategic intervention and how it could solve the problem, as well as its proposed objectives. This section also examines similar initiatives in other sectors, such as The Global Alliance for Vaccination and Immunisation (GAVI), and highlights key lessons which can be drawn from their experiences.

The components of the strategic intervention discusses in more detail the three key components of the strategic intervention: (1) how capital can be generated; (2) how it can be deployed; and (3) how it can be managed. It first outlines the recent pledges and disbursements in the 2010–2012 FSF period by eight donor countries, using this as a basis for raising the initial additional capital for the strategic intervention. Several financial instruments for deploying and stimulating capital to address the lack of demand in the interim period are then outlined, and finally some possible options for the management of the intervention are examined.

Summary of options for the strategic intervention draws out the conclusions from the previous section, in order to outline some basic options for raising capital, providing incentives and using or creating institutions to implement the intervention.

Lack of demand: What are the risks?

Key Points

Without interim demand for REDD+ emission reductions, there will be:

- Little economic incentive for forest countries to participate in REDD+
- Little motivation to redirect forest country resources towards REDD+ activities
- Little incentive for private sector investment in REDD+ projects

There is currently no source of demand to pay for medium to long-term emission reductions from REDD+ at the scale needed to meet emission reduction targets in tropical forest countries, before 2020 (explained on page 11). This is in contrast to the principles that underpin the global REDD+ negotiations, e.g. the permanence of REDD+, and does not sit well with the promise of “predictable, results-based finance” by the international community in Cancun in December 2011 and in Warsaw in November 2013 (UNFCCC, Decisions 2/CP.17, Decision -/CP.19).

This is a serious problem, because incentives to achieve results-based emission reductions in tropical forest countries are central to the successful implementation of REDD+. However, forest countries are only incentivised insofar as the incentive – in this case payments for emission reductions – actually exists. If there is little demand for the emission reductions, i.e. if there are very few counterparties to buy REDD+ emission reductions, then there is little incentive.

This creates a number of problems and entails various risks:

Little economic incentive for forest countries to participate in REDD+. Under the global climate negotiations, REDD+ is a mechanism that forest countries voluntarily agree to participate in, and there are no sanctions for failing to meet REDD+ related emissions targets. This means that incentives play a very important role. However, the current lack of demand means that there is little economic incentive to participate in REDD+. Meanwhile, REDD+ has become considerably more complicated and expensive to implement in comparison to several years ago, resulting in the already low incentive to invest in REDD+ being further eroded.

Little motivation to redirect forest country resources. Considerable investment in political, human and financial capital in a forest country is a precondition for the successful implementation of REDD+ programmes or projects. However, if there is a lack of long-term, credible and predictable economic incentives, forest countries have little motivation to divert resources away from economically viable ‘business as usual’ activities, in order to create the infrastructure and enabling conditions for REDD+.

Little incentive for private sector investment. There has been low mobilisation of private sector finance for REDD+ programmes or projects. This is not because of an aversion to investment in tropical forest countries: capital will flow at scale if the risk-adjusted returns are acceptable. It is because there is no predictability of revenue or credible counterparties available to sign long-term, legally binding contracts⁴.

⁴ For example, non-REDD+ private sector investment in tropical forest countries outstrips donor and forest country governments’ own investments by a factor of nine (World Bank, 2013).

There is compelling evidence of the impact of lack of demand on market development and private sector investment in climate change mitigation programmes and projects. In the case of the Clean Development Mechanism (CDM), demand for Certified Emissions Reductions (CERs) has fallen over many years. This was driven by many factors, primarily falling demand in the European Union Emissions Trading System (EU ETS), resulting in an oversupply of CERs, and causing the price to crash and investment to plummet.⁵

Following the UN Climate Conference in Warsaw in November 2013, it was reported that investment under the CDM had ground to a halt, with the carbon offset market ‘likely to remain “in a coma” for years’, due to low demand (Reuters, 2013b).

If demand for REDD+ emission reductions suffers the same fate, the ultimate consequence will be that the climate change mitigation potential of forests will not be harnessed, and forests may not play a permanent, central role within the global effort to address climate change.

⁵ This was exacerbated by the global economic recession, which also affected the market for the period 2008 to 2010.

REDD+ supply and demand: How big is the gap?

Key Points

- Total potential demand for REDD+ emission reductions up to 2020 is currently about 253 MtCO₂e.
- Reducing annual deforestation by 50% by 2020 amounts to a global supply of 3,300–9,900 MtCO₂e from all forest and land-use activities.
- This supply is 13–39 times greater than the total potential demand for REDD+ emission reductions, requiring transactions valued at US\$15–48 bn to fill the gap.
- It is very likely that only a proportion of this supply will be paid for through international REDD+ trading mechanisms.
- As an example, if 25% of the supply were paid for using international REDD+ trading mechanisms, then supply would be 3–10 times greater than demand, requiring transactions valued at US\$4–12 bn.

According to most estimates, tens of billions of dollars will be needed annually to address deforestation and forest degradation at a meaningful scale. UNEP, for example, suggests that an average annual additional investment of US\$40 billion is required to halve global deforestation by 2030 (UNEP, 2011). We are currently far from achieving this target.

This section outlines the current sources of demand for REDD+ emission reductions from voluntary markets, compliance markets and non-market sources⁶. It then outlines the potential sources of demand in the interim period, and

⁶ This should not be considered a globally exhaustive list, but it can be assumed to cover the majority of the potential sources of demand for REDD+ emission reductions.

estimates the mismatch between this demand and the supply of REDD+ emission reductions. Demand is defined as the volume of carbon that can be purchased by potential buyers of units of REDD+ emission reductions. Annex I describes the sources of potential demand for the interim period in greater detail.

Existing sources of demand

The majority of funding for REDD+ so far has been from the public sector. Around US\$4.5 bn was pledged by Annex I countries in the 2010–12 period⁷, while very few commitments have been made outside the REDD+ FSF period⁸, which ended in 2012 (ISU, 2011).

Public sector funds for REDD+ are channelled through a variety of multilateral and bilateral channels. Table I shows the allocation to and disbursement from a selection of these funds, as well as the phase of REDD+ on which they focus (see page 15 for a description of the phases).

As can be seen in the table, the majority of public sector funding channels are not focussing on purchasing REDD+ emission reductions (which can happen in Phase 3 of REDD+). Instead they are investing in REDD+ Readiness, preparing countries for the implementation of REDD+. Once countries have moved in to Phase 3, however, a large-scale source of demand for REDD+ emission reductions will be required to ensure REDD+ becomes sustainable in the future.

Demand can originate from market or non-market sources. Market-based demand can come from compliance markets, such as the California Emissions Trading Scheme, or from the voluntary markets. Non-market sources may include the funding channels listed in Table I, as well as others such as the BioCarbon Fund and the KfW REDD+ Early Movers Programme (see Annex I).

After 2020, demand is expected to originate from a compliance market established as part of a global climate change agreement under the UNFCCC. In the interim period, however (between 2015 and 2020), other compliance markets, voluntary markets and non-market sources must serve as a source of demand.

⁷ According to DFID (2012), the overall pledge for REDD+ in the FSF period is increased to US\$6.1 billion.

⁸ The finance for climate change adaptation and mitigation pledged by industrialised countries at Copenhagen in 2009, to be spent in the period 2010 to 2012.

Table I: Examples of the largest current REDD+ funding channels and the phases they target

FUNDING CHANNELS	PHASE 1	PHASE 2	PHASE 3	PLEDGED (US\$ MLN)	DEPOSITED (US\$ MLN)	DISBURSED (US\$ MLN)
MULTILATERAL						
FCPF READINESS FUND	✓			240	240	16
FCPF CARBON FUND			✓	390	219	0
FIP		✓		611	490	0
CONGO BASIN FOREST FUND	✓	✓		186	164	35
UN-REDD PROGRAMME	✓	✓		173	171	130
BILATERAL						
BRAZIL AMAZON FUND	✓	✓	✓	1030	785	95
GUYANA REDD+ INVESTMENT FUND (GRIF)	✓	✓	✓	250	70	14.4
NORWAY-INDONESIA LETTER OF INTENT ⁹	✓	✓	✓	1000	40	40

Source: Adapted from ISU, 2011 using data from climatefundsupdate.org, fundoamazonia.gov.br, fundoamazonia.gov.br/projects_fitrustee.worldbank.org/webroot/data/GRIF_TR_03_13.pdf

Note: The development of REDD+ at a national level in developing countries is implemented in three phases (UNFCCC, 2011): planning and capacity building; implementation of a national REDD+ strategy; and payments for results-based emission reductions.

⁹ At the time of writing, Indonesia intends to create the FREDDI (see page 31) to manage the majority of this funding.

Table 2: Sources of demand, as of January 2014, used for the calculation of interim demand

SOURCE OF INTERIM DEMAND*	INTERIM DEMAND VOLUME (TONNES OF CARBON)
COMPLIANCE MARKETS	
CALIFORNIA ETS ✓	80,000,000
EU ETS	0
AUSTRALIAN CPM	0
NZ ETS	0
QUEBEC ETS	0
RGGI	0
JAPAN ETS	0
OTHERS	0
NON-MARKET SOURCES	
BIOCARBON FUND ✓	28,430,000 ¹⁰
FCPF CARBON FUND ✓	43,800,000 ¹¹
KFW REDD+ EARLY MOVERS PROGRAMME ✓	13,650,793 ¹²
NORWAY-INDONESIA LETTER OF INTENT ¹³	0
BRAZIL AMAZON FUND	0 ¹⁴
GRIF	0 ¹⁵
VOLUNTARY MARKET	
PRE-COMPLIANCE MARKET (2013–2017) ✓	87,360,000 ¹⁶
TOTAL INTERIM DEMAND	253,240,793

* Sources with a tick are those included in the calculation of the total potential demand as of January 2014. In some cases a potential demand source may not be included because there is insufficient information to make an estimate. See Annex 1 for more information.

¹⁰ The size of the fund is US\$280 million. A carbon price of US\$5/tonne is assumed, and that 50% of the fund is used to buy REDD+ emission reductions. It also includes the 430,000 tCO₂ already allocated to REDD+ emission reductions in Tranche 2.

¹¹ The size of the fund is US\$219 million. A carbon price of US\$5/tonne is assumed, and that 100% of the fund is used to buy REDD+ emission reductions.

¹² The size of the fund is US\$43 million. A carbon price of US\$3.15/tonne is assumed, and that 100% of the fund is used to buy REDD+ emission reductions.

¹³ Publicly available information is currently insufficient to allow a reliable estimate of the proportion of Phase 3 payments that will be used to stimulate demand, or to estimate a carbon price. For these reasons, the volume used in the calculation as of January 2014 is zero. For the full explanation see Annex 1.

¹⁴ Since there is no exchange of REDD+ emission reduction units either between the fund and its donors, or between the fund and its recipients of capital, the effective demand for REDD+ emission reductions is zero.

¹⁵ Since there is no exchange of REDD+ emission reduction units either between the fund and its donors, or between the fund and its recipients of capital, the effective demand for REDD+ emission reductions is zero.

¹⁶ The expected supply of REDD+ emissions reductions from 2013–2017 is 1.3 billion tonnes. The percentage of direct pre-compliance buyers in 2012 was 14%. In addition, the forest carbon market in 2012 found buyers for only 48% of its supply. We assume that these figures will remain constant. We also assume that only the 14% of pre-compliance buyers act as sources of demand. This is because they are likely to be the only buyers of emissions reductions generated by forest country government REDD+ programmes or projects. The total potential demand is derived by multiplying the future size of the forest carbon market (1.3 billion tonnes) by the proportion of the direct pre-compliance buyers (14%) and the market absorption rate of 48% (Ecosystem Marketplace, 2013).

Supply and demand in the interim period

The sources of demand that are expected to be available in the interim period are outlined in Table 2. For a full description of all potential sources of demand, a discussion of whether they can be expected to come online in the interim period, and the calculations used, see Annex 1. Although the time horizons for some sources in Table 2 differ, and the calculations are based on assumptions, these values serve as an order of magnitude estimate of demand for REDD+ emission reductions in the period 2015 to 2020. The total potential demand for REDD+ emission reductions up to 2020 is approximately 253 MtCO₂e (see Table 1).

To make an assessment of the difference between supply and demand, the 253 MtCO₂e of demand must be compared with supply, where the latter is defined as the proportion of forest and land-use emission reductions paid for through REDD+. No global estimate for all emission reductions targets in tropical forest countries exists. Therefore, to illustrate the size of the difference between supply and demand, we make a number of comparisons. First we compare the demand with the emissions reductions target of the State of Acre in Brazil, and then with a global deforestation reduction target.

The State of Acre has a target to reduce its deforestation rate by 80% by 2020 (WWF, 2013). Since over 95% of Acre's emissions are a result of land use change and forestry, nearly all of this reduction in emissions could be compensated for using REDD+ payments. Assuming a linear reduction, and that all emission reductions are compensated for, Acre will generate a supply of approximately 118MtCO₂e between 2012 and 2020 (WWF-UK & GCP, 2013).

If the entire anticipated demand from the California cap and trade program were to be used to buy Acre's emission reductions, it could pay for only 68%. For Acre's supply to be fully paid for using the sources of demand in Table 2, the FCPF Carbon Fund will also need to exhaust almost its entire funds on purchasing emission reductions from Acre. The remaining 129 MtCO₂ of demand available would need to cover emission reductions generated from the other 96% of the Brazilian

Amazon (Acre represents just over 4% of the Brazilian Amazon), plus the remaining emission reductions generated from other tropical forest countries, worldwide, between now and 2020.

As an alternative way of assessing the difference between supply and demand in the interim period, consider a global target of a 50% reduction in annual deforestation levels by 2020 (compared to current levels)¹⁷. The target proposed by the European Commission, which includes many donor countries, and is used here in the absence of a global target agreed by all countries. A set of scenarios are used because estimates of emissions from deforestation differ¹⁸. The two most extreme scenarios – upper and lower bounds – estimate that between 3,300 MtCO₂e and 9,900 MtCO₂e of emission reductions will be generated between 2015 and 2020 from all forest and land-use activities. In contrast, the total potential demand for REDD+ emission reductions is only around 253 MtCO₂e. The supply of emission reductions from forest and land-use activities is between 13 and 39 times greater than the total potential demand for REDD+ emission reductions in the interim period.

Using the two scenarios above, and assuming a carbon price of US\$5/tCO₂, the supply-demand mismatch equates to a gap of around US\$15–48 bn of primary market transactions in the interim period. (Note: an implicit price for forest carbon is unlikely to emerge whilst there is no liquid secondary market. In the absence of this, US\$5/tCO₂ is an estimate of the carbon price used by some market participants, e.g. the Amazon Fund.)

¹⁷ In the recent IPCC AR5 report, carbon emissions from land use change were identified as the second largest contributor to global warming. The report identifies a target of a 50% reduction in emissions from deforestation, which would be commensurate with the substantial contribution of this sector to global warming and with the need to limit the global temperature rise to 2 degrees Celsius.

¹⁸ This study examined four scenarios in total: (i) emissions from deforestation using an estimate of 5.8 Gt CO₂e/yr (Eliasch Review, 2008); (ii) an upper bound emissions estimate for deforestation and land use change of 6.6 Gt CO₂e/yr (CGIAR, 2013); (iii) the lower bound estimate of emissions from deforestation and land use change of 2.2 Gt CO₂e/yr (CGIAR, 2013); and (iv) average of (iii) and (iv). In all four cases, a linear reduction of emissions in global tropical forests starts in 2015. The emission reductions generated between 2015 and 2020 are: 8.7 Gt CO₂e (i); 9.9 Gt CO₂e (ii); 3.3 Gt CO₂e (iii); 6.6 Gt CO₂e (iv).

It is likely that not all emission reductions from forest and land-use activities will be sold through an international trading mechanism, such as an international REDD+ offsetting mechanism, as many will likely be used to meet domestic emission reduction targets.

If, for example, only 25% (825–2,475 MtCO₂e) of all forest and land-use emission reductions are paid for using international REDD+ trading mechanisms, then the supply is between 3 and 10 times greater than demand, and the gap is valued at around US\$4–12 billion. This scenario assumes a significant role for an international trading mechanism, but not such a large role that it disincentivises domestic action in the industrialised, non-tropical forest countries. It should be noted, however, that this is a hypothetical value, and that the proportion of emission reductions that can or may need to be achieved through such a mechanism may be far greater.

Key assumptions used in estimating global supply and demand	
ASSUMPTION	REASON
A global deforestation reduction target of 50% on current levels by 2020.	The target proposed by the European Commission, which includes many donor countries, and is used here in the absence of a global target agreed by all countries.
Not all forest and land-use emission reductions will be paid for through an international REDD+ trading mechanism. In this report, we use 25% as an example of the percentage of the global supply of forest and land-use emission reductions that are paid for through REDD+.	The importance of an international trading mechanism for REDD+ emission reductions under the anticipated global climate agreement is undecided. We assume that for every four units of REDD+ emission reductions generated by tropical forest countries, at least one is sold on the international market, likely to be used as an offset, while three are used for compliance with domestic targets. This assumes a significant role for an international trading mechanism, but not such a large role that it disincentivises domestic action in the industrialised, non-tropical forest, countries.
Carbon price of US\$5/tCO ₂	An implicit price for forest carbon is unlikely to emerge whilst there is no liquid secondary market. In the absence of this, US\$5/tCO ₂ is an estimate of the carbon price used by some market participants, e.g. the Amazon Fund.

Figure 1: Estimated global REDD+ supply and demand from 2015–2020: a comparison



Forest and land-use activities under a strategic intervention

Key Points

- The scope of activities considered for a strategic intervention is best defined using a cross-sectoral landscape approach.
- Activities accounted for under both the REDD+ and LULUCF frameworks should be considered.

Different activities linked to forests and land use, such as forest conservation and agroforestry, will generate different emission reductions. Therefore, in order to maximise emission reductions, the scope of activities to be covered by the intervention should be carefully defined. It is also becoming clear to stakeholders that REDD+ must be couched within the context of other land use and forest activities if it is to succeed. This way of grouping activities is referred to as a 'landscape' approach for land use and forest activities.

The most commonly used frameworks for categorising land use and forest activities are those used in the international frameworks of Land Use, Land Use Change and Forestry (LULUCF), and Reducing Emissions from Deforestation, Forest Degradation, Conservation, Sustainable Forest Management and the Enhancement of Forest Carbon Stocks (REDD+). There are also frameworks in the voluntary markets for REDD+ emission reductions.

The IFF project advocates adopting a cross-sectoral landscape approach which exploits the links between REDD+ and LULUCF, by grouping activities which promote high carbon stock land use in forests and agricultural areas.

Below, we describe LULUCF and REDD+ and the links between them, and explain how these links can help provide a logical scope of activities for the strategic intervention.

Land Use, Land Use Change and Forestry (LULUCF)

Under the UNFCCC, LULUCF is a framework for grouping activities that cause anthropogenic greenhouse gas (GHG) emissions from land use, land-use change and forestry activities (UNFCCC, 2013). The LULUCF framework is used by all Parties of the UNFCCC to report on their GHG emissions from different types of land. Kyoto Protocol signatories must account for their GHG emissions from a range of different types of land-based activities, including afforestation, reforestation, deforestation and forest management. Parties can also voluntarily account for emissions from cropland management, grazing-land management, revegetation and wetland drainage and rewetting.

The LULUCF information is used to assess compliance in meeting emission targets, and is essential for participation in the Kyoto Protocol's emissions trading scheme, Joint Implementation mechanism, and the Clean Development Mechanism (CDM). Under the CDM, emission-reduction projects in developing countries can earn credits called certified emission reductions (CERs). These tradable credits can be used by industrialised countries to meet a portion of their emission reduction targets under the Kyoto Protocol. This process is known as offsetting. Among the different types of LULUCF activity, there are only two – afforestation and reforestation – which can currently be used by industrialised countries to offset under the CDM (UNFCCC, 2012). There are no immediate signs as to whether this will change to include a broader range of activities.

Reducing Emissions from Deforestation and Degradation (REDD+)

While mitigation from activities that fall under the LULUCF framework applies to industrialised countries, mitigation that falls under the REDD+ framework applies to developing countries.

Similar to LULUCF, REDD+ is an accounting framework which aims to mitigate climate change by changing human activities on forested land, and the forest

carbon stocks associated with that land. And similar to the CDM, REDD+ is also a mechanism that can channel capital from industrialised countries to forest countries by, for example, the process of offsetting.

The development of REDD+ at a national level in developing countries is implemented in three phases (UNFCCC, 2011): Phase 1 – planning and capacity building; Phase 2 – implementation of a national REDD+ strategy; and Phase 3 – payments for results-based emission reductions. Parties to the UNFCCC recognise the role of market-based approaches in providing result based payments for REDD+, though no agreement has yet been reached on the definition of market based approaches.

Links between REDD+ and LULUCF

Both REDD+ and LULUCF were developed for the same purpose – to protect and enhance sinks and reservoirs of GHGs (e.g. forests) and to prevent GHG emissions from land-use change. As would be expected, the activities that fall under the two frameworks have many similarities. For this reason, Parties under the UNFCCC are considering whether the REDD+ framework could also include activities from the LULUCF framework, in addition to the five types of activities already agreed (Climate Focus & Climate Advisers, 2012). The set of additional activities from the LULUCF framework that are under consideration include those linked to agriculture and livestock.

Crop-based agriculture is responsible for an estimated 14% of global GHG emissions (GEF, 2012), while livestock adds an additional 14.5% (FAO, 2013). They are both direct and indirect drivers of deforestation as well as land and forest degradation (GCP, 2013). Agriculture has been widely overlooked in the climate change negotiations and is largely absent from the main climate change financing mechanisms (FAO, 2010; DFID, 2011). It is not formally part of REDD+ negotiations, nor is it included in the definition of REDD+.

However, there is growing recognition that implementation of REDD+ can only be achieved in conjunction with more

sustainable land use activities, such as the cropland and grazing-land management activities incorporated under LULUCF. Certain modifications to cropland and grazing-land management can avoid deforestation or conserve forest carbon stocks – both of which are activities under the REDD+ framework – and generate emission reductions.

The importance of agricultural activities is also reflected in groupings adopted in the voluntary market for emission reductions. There has been a push for comprehensive carbon accounting for land use activities across the spectrum of land-use and forest activities, using groupings such as agriculture, forestry and other land uses (AFOLU), reducing emissions from all land uses (REALU), and climate-smart agriculture (CSA).

The IFF project advocates exploiting the obvious links between REDD+ and LULUCF for this strategic intervention. This can be best achieved by adopting a cross-sectoral landscape approach, and grouping activities which promote high carbon stock land use in forests and agricultural areas.

This approach includes activities that are eligible under the REDD+ framework, but also incorporates cropland and grazing-land management activities as defined by the LULUCF framework. The emission reductions generated from these activities, however, will ultimately be compliant with the REDD+ accounting framework. In the voluntary market groupings, forest and land-use activities will almost certainly reside in, or be similar to, the AFOLU, REALU or CSA groupings.

It is important to note that there will be inherent challenges in this approach. Whilst carbon accounting methodologies have been developed for activities and projects linked to agriculture (e.g. the Verified Carbon Standard for the Kenya Agricultural Carbon Project¹⁹), they are technically complex, often inflexible, and associated with high monitoring, reporting and verification costs (PwC, 2011). Furthermore, methodologies are not yet readily

¹⁹ See: http://wbcarbonfinance.org/docs/Mor_ThanHotAir.pdf

available, or have not been tested, for the full scope of activities to be incorporated under the intervention.

These methodological barriers raise questions of compatibility and fungibility with other traded emission reductions. This is exemplified by the fact that, at least for now, the majority of agricultural activities are ineligible under the CDM. This is because of challenges in aggregating emission reductions from smallholders, non-scalable project approaches, capital and capacity constraints, and others (PwC, 2011; DFID, 2011).

In addition, not all agriculture activities are the same (e.g. export-oriented monocultures are not the same as small-scale farming), making it difficult to measure the co-benefits²⁰ expected from each project and their socio-environmental integrity²¹ (Reyes, O. 2011). It is also important to conduct due diligence to avoid generating REDD+ emission reductions from activities on land that was obtained illegally or without proper consent, e.g. through land grabbing.

Despite these potential challenges, it is important to pursue this integrated approach, because of its potential to allow low carbon development in tropical forest countries, while also addressing the drivers of deforestation and poverty reduction, and reducing the risk of carbon leakage.

²⁰ Co-benefits are the in-direct benefits associated with a project, and are not the project's primary aim. They benefit some or all of the project stakeholders. For example, a project may have a primary goal of reducing emissions from agriculture, but also provide co-benefits such as local employment, community development, access to markets, etc.

²¹ For example, soil carbon sequestration can be achieved by no-tillage agricultural practices on monoculture plantations to generate emission reductions. This is different from agroforestry practices and the associated emission reductions, because the latter can provide a wider range of co-benefits that go beyond carbon sequestration. This gives it more environmental integrity and value for buyers, implementers and more importantly forest users.



How could a strategic intervention help?

Key Points

- The strategic intervention would use donor country government capital to stimulate demand for forest and land-use emission reductions, filling the supply-demand gap.
- It should focus on purchasing, and stimulating the private sector to purchase, REDD+ emission reductions.
- It can increase certainty over the price and/or volume of REDD+ emission reductions, and with complementary efforts it can also support the development of a liquid secondary market by 2020.

A strategic intervention is needed, by donor country governments, forest country governments and public financial institutions, to fill the gap between supply and demand for REDD+ emission reductions. Public sector capital should be deployed to increase both public and private sector demand, and accelerate financial flows for forests at the scale of billions of dollars.

This strategic intervention could offer payments for, or linked to, the delivery of REDD+ emission reductions. It could also offer products and services to ensure that the supply of REDD+ emission reductions can meet the growing demand once stimulated by this intervention.

The intervention should focus on two broad areas of operational activity:

1. Purchasing emission reductions from forest and land-use activities;
2. Stimulating the private sector to purchase emission reductions from forest and land-use activities.

The strategic intervention can stimulate demand primarily by offering greater certainty over the price, volume or both, for forest and land-based emission reductions.

This will scale up demand for emission reductions from these activities, create investment-grade conditions and a track record for REDD+ programmes and projects (which is a prerequisite for scaled-up investment from large institutional investors), and therefore stimulate additional investment. This kind of incentive mechanism is known as an Advance Market Commitment (AMC).

Public sector capital can be used to create conditions under which competitive risk-adjusted returns can be achieved in the interim period. The intervention can do this by stimulating the overall demand for forest and land-based emission reductions, thus increasing revenue certainty for relevant projects, and providing incentives and favourable investment conditions for governments and the private sector to enter long-term, results-based contracts.

The proposed intervention can also offer finance (e.g. grants, equity or concessional loans) for the development of relevant programmes and projects (i.e. the supply), in order to ensure an ongoing balance between the increased demand of emissions reductions and the supply. Risk mitigation instruments, such as commercial and political risk insurance, can also be used in parallel, as well as technical assistance and advisory services.

The strategic intervention will, by definition, be incentivising an aggregate increase in investments in sustainable land use and forests. Over time, private sector investors may wish to gain exposure to these emerging sectors, but only if they can invest on a large scale (i.e. hundreds of millions of USD). If this is the case, the strategic intervention may be able to attract investment at this scale.

Finally, measuring the success of the strategic intervention will help it meet its goals. The success of the strategic intervention can be measured by comparing the real-world results (in the future) against a set of indicators, examples of which are proposed in Annex 2.

Similar initiatives in other sectors

The healthcare sector

The Global Alliance for Vaccination and Immunisation (GAVI) is a public-private partnership which makes multi-year, long-term financial commitments to increase the immunisation of children in its partner countries. GAVI has contributed to the immunisation of 370 million children and committed US\$7.9 billion since 2000. It encourages ownership and co-financing by the countries with which it works, tries to stimulate private sector participation, and works with existing institutions, including national health systems.

The GAVI operating model is based on three financing mechanisms to generate long-term, predictable finance:

1. Matched giving from foundations and the public sector. The UK's Department for International Development (DFID) and the Gates Foundation have pledged US\$130 million in total to GAVI, if it is matched by contributions from the public sector, dollar for dollar. This mechanism is designed to raise US\$260 million by 2015.
2. The International Finance Facility for Immunization (IFFIm). This was set up in 2006 to accelerate the availability and predictability of funding. It uses long-term (up to 20 years), legally binding pledges from donor governments to back vaccination or immunisation bonds that are sold in to the capital markets. As of July 2013, IFFIm has raised US\$4.5 billion, backed by pledges of up to 23 years from the governments of seven donor countries.
3. An Advance Market Commitment (AMC) mechanism, i.e. a commitment to buy a given volume of vaccines at a given price. The price paid by the AMC for the first two years was US\$7.50 per dose (to help cover upfront development costs), and then reverted to a maximum of US\$3.50 per dose for years 3 to 10.

The renewable energy sector

Feed-in tariff (FiTs) schemes are one of the most prevalent national renewable energy policies used globally. They have driven rapid renewable energy scale up in key markets. According to calculations by Bloomberg New Energy Finance,

FiTs were linked to 87% of solar photovoltaic deployment and 64% of wind projects globally by mid-2011, with a large degree of deployment in the developed world, particularly in Europe.

FiTs are a type of performance-based, public-private partnership. The price paid to electricity producers is guaranteed at some level, or supported with a subsidy, through a long-term contract (ranging from 10 to 25 years). The reasonably certain rate of return that FiTs provide over a long time frame gives investors the confidence to deploy capital at a large scale. Public support is required to maintain Transparency, Longevity and Certainty (TLC)²² for investors over extended periods of time, so transparent periodic reviews are preferable. This allows the FiTs to respond to changing market conditions and to ensure cost and price effectiveness while maintaining fair returns to investors on the pathway to grid parity.²³

Transferrable lessons

Both the examples above, from the health and energy sectors, share certain properties with REDD+. They involved relatively high upfront or capital expenditure costs, operate over relatively long timeframes, have relatively low operating costs and have faced uncertainties over market variables (such as price and demand). Furthermore, to achieve results at scale, they both required the deployment of significant amounts of private sector capital. This creates a number of transferable lessons.

First, investment is driven by expectations of future returns, and responds well to targeted support if the incentives are attractive enough. The most effective incentives provide investors with TLC while seeking to minimise costs. Germany has deployed renewable energy since 1990, and China has deployed wind energy since 2000, both using attractive incentives.

²² Transparency relates to the ease with which policy can be understood and executed. Longevity relates to the policy matching the investment horizon and Certainty relates to the policy delivering a measurable revenue stream to support a reasonable rate of return. For more information, refer to Deutsche Bank Climate Change Advisors (2009).

²³ The point at which the cost per unit of electricity generated by renewables is equal to the cost per unit of electricity generated by fossil fuels.

Second, scaled-up investment requires a suitable instrument for investors. In the renewable infrastructure sector, most investment to date has been in unlisted private equity and debt vehicles²⁴. These investments involve a 7–10 year commitment and little liquidity²⁵. In contrast, the largest pools of private sector capital are in pension and insurance funds, which allocate capital to liquid, listed investments. A much deeper pool of capital could therefore be accessed if listed investment vehicles were available.

Third, policy uncertainty is highly damaging for investors. This is especially true with retroactive changes to policies that result in a weakening or elimination of the expected financial returns on existing investments. These changes – like Spain's retroactive adjustments to solar FiT rates – have diminished investor confidence (IIGCC, 2013).

Fourth, there can be trade-offs between efficiency and effectiveness. Generous subsidies can be effective in attracting capital, but might be costly on a unit cost basis, and therefore inefficient. However, it is important to note that there is a cost to all incentive regimes, however effectively they are managed over time.

Finally, legally binding financial commitments by donor country governments were a key element of success in the GAVI's AMC mechanism. This provided tangible financial guarantees to manufacturers, and was crucial in building momentum with the partner countries, donors to the initiative, as well as product and service suppliers (Dalberg Global Development Advisors, 2013). This is an important lesson, given that there has been a lack of legally binding financial commitments from donor country governments to REDD+ since the end of the FSF period.

There are many clear and transferable lessons above that can inform a strategic intervention in the REDD+ sector. However, it should be noted that in the case of renewable

energy, many of these lessons were learned in industrialised countries – it remains unclear whether they are applicable to forest countries. For example, the capacity of projects in the industrialised countries to absorb an increase in capital expenditure on renewable energy projects is comparatively larger than forest countries. Similarly, the ability to absorb an increase in capital expenditure on REDD+ projects may be lower in forest countries, and will vary by country.

²⁴ These are legally separate entities (to the investor in the debt vehicle, and the bank) that buy debt that is linked to infrastructure, e.g. infrastructure project loans.

²⁵ Liquidity is the ability to sell your investment and receive the resulting funds in a short period of time.

How is this strategic intervention different?

There are many funds and mechanisms with similar aims to this strategic intervention. This intervention differs from existing funds and mechanisms in some important ways:

Larger scale funding. Although there are existing mechanisms that can pay for emission reductions in the interim period, they are of a considerably smaller scale than the funding required to, for example, reduce global annual deforestation rates by 50% by 2020. To achieve this or a similar goal, funding needs to be scaled up to the order of billions of dollars, i.e. to a similar scale to the FSF pledges.

Funding used to provide incentives. This project advocates clear, long-term incentives as a means of scaling up demand. Using a single variable such as price, a 'price signal' can be created using a floor price, a combination of a floor price and a capped price, or through an Emission Reduction Purchase Agreement (resembling a financial forward contract). The details of the contract could be negotiated bilaterally, or prices could be determined, for example, by auctioning.

Targeted incentives: private sector and forest countries. The value of this proposal goes beyond just providing a scaled up source of interim demand for REDD+. It incentivises an increase in private sector investment in REDD+, demonstrates continued donor country commitment to REDD+, and maintains the political commitment of forest country governments.

Flexibility of incentives. Payment on delivery of emission reductions is not the only way of incentivising an increase in demand. Contracts might also involve prepayment of a portion of the final contract value, for example, or minimum prices for emission reductions.

Flexibility of design. While existing funds or mechanisms can arguably be scaled up (e.g. the FCPF Carbon Fund), this intervention can be flexibly designed. If needed, new partnerships could be created, e.g. a PPP modelled on the GAVI. Other design features can be tailored to donor country, forest country or private sector needs, including governance, accountability, eligibility criteria, safeguards, the architecture of the mechanism and how it uses funds.

A logical scope of activities. This intervention exploits the obvious links between REDD+ and LULUCF by adopting a cross-sectoral landscape approach, and grouping activities from both frameworks which promote high carbon stock land use in forests and agricultural areas.

Finance and technical assistance. The intervention need not just provide incentives. Technical assistance or financial instruments (e.g. grants or concessional loans) can also be offered, increasing access to capital and early stage project development.

Demand beyond 2020. This initiative will lay out the spectrum of options for creating interim demand. It will also help inform the design of the larger financial mechanisms that the international community hopes will create demand for REDD+ emission reductions beyond 2020, such as the Green Climate Fund.

The components of the strategic intervention

Key Points

The proposed intervention has three main components:

- **Generation of capital, options for which are guided by the spending plans of eight major donor countries;**
- **Deployment of capital, through the provision of incentives, finance and risk management, and technical assistance and advisory services;**
- **Implementing institutions, which could be existing or new multinational funds, the Green Climate Fund, national REDD+ funds, international crediting mechanisms, or public private partnerships.**

To address the lack of demand for REDD+ emission reductions, the IFF project proposes a strategic intervention by donor country governments, forest countries, and public financial institutions. It is assumed that the initial capital to fund this strategic intervention will be provided by primarily donor country governments. This public sector capital would then be used to stimulate the purchase of REDD+ emission reductions by the public and private sectors, with the objective of creating a much larger transaction value.

This section explores the potential sources of money from donor country governments, possible instruments through which the money could be spent, and institutions that could manage the money. In each of the sections, it is evident that there are clear links to existing policies, institutions and financial mechanisms. These links are made clear when relevant.

Generation of capital

This section explores the financing for REDD+ of eight major donor countries. It outlines their history of pledges and disbursements up to and during the 2010–2012 period, sheds some light on their post-2012 plans and explores the relevance of these plans in addressing the demand problem for the interim period.

Australia

Australia finances REDD+ through the International Forest Carbon Initiative, bilateral relationships with Indonesia and Papua New Guinea, and key multilateral initiatives such as the FCPF and FIP. By 2010 Australia had allocated US\$66 million towards REDD+, just under 30% of which was bilateral (REDD+ Survey, 2010). In June 2010 Australia announced that it would contribute approximately US\$560 million to climate change as part of its FSF commitments, US\$130 million of which would be for REDD+ (Australian Government, 2010).

According to submissions to the UNFCCC, Australia fully met this commitment (UNFCCC, 2013). The US\$ 130 million to be allocated to REDD+ went to the International Forest Carbon Initiative to assist developing countries implement REDD+ (UNFCCC, 2013). Total funding for REDD+ reported by the Voluntary REDD+ database from 2007 until 2013 is approximately US\$ 182.55 million (Voluntary REDD+ Database, 2013).

Following the general elections in September 2013 and COP19, the Australian Government has not announced pledges for forest-related finance in the post-2012 period. Nevertheless, assuming that political momentum for REDD+ financing remains, this strategic intervention could prove to be a key tool for Australia in expanding and strengthening its positive and strong historical engagement on REDD+, particularly with Indonesia.

Germany

Germany finances REDD+ activities in developing countries through the Federal Ministry for Economic Cooperation and Development (BMZ). The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) also supports climate protection projects through the International Climate Initiative (ICI).

By 2010 Germany had allocated approximately US\$276 million for the development and implementation of REDD+ national strategies, demonstration projects and performance based payments (REDD+ Survey, 2010). In May 2010, Germany

announced that it would spend approximately US\$500 million between 2010 and 2012 on REDD+, and reported in 2012 that around US\$ 390 million of this had been disbursed towards REDD+ activities in developing countries (Voluntary REDD+ Database, 2013). Germany also finances performance based payments for REDD+ through its REDD Early Movers (REM) programme (see Annex 1 for more information). With a funding volume of €32.5 million, REM has already agreed to spend around €19 million buying 8 million tCO₂ from REDD+ activities in the State of Acre over a four year period.

Germany's post-2012 engagement will depend on the policies of its new government²⁶, as well as the on-going progress of international climate change negotiations. Nevertheless, funding for this strategic intervention supports Germany's historical funding strategy, and builds on the steps already taken to address the lack of demand by the REM.

Japan

Japan finances REDD+ through bilateral partnerships with governments, as well as grants to multi-national funds such as the Global Environment Facility (GEF). Before 2010, Japan had allocated around US\$4 billion for REDD+ activities and technical assistance (REDD+ Survey, 2010), of which around 60% was loans, grants, and technical assistance provided through bilateral relationships. It is unclear whether this finance is new and additional (although this requirement was first placed on countries for the Fast Start Finance (FSF) period, i.e. post-2010). Between 2010 and 2012 – i.e. during the FSF period – Japan allocated approximately US\$720 million to REDD+ (UNFCCC Delegation of Japan, 2013), with grant aid, technical assistance and contributions to multilateral funds accounting for just under one third.

Japan has set up the Joint Crediting Mechanism (JCM) as a complement to the CDM. Using bilateral agreements with forest countries, Japan can obtain emission reductions from REDD+ projects.²⁷ A JCM Partnership with Indonesia has been signed, and feasibility studies are already examining the

potential of REDD+ projects generating emission reductions in Indonesia and Vietnam (New Mechanisms Express, 2013).

Similar to Germany, Japan recognises the need to take early action to pay for performance, as evidenced by its creation of the JCM. Funding for this strategic intervention builds on bilateral action, providing another means of funding performance-based payments.

Norway

Before 2010, Norway had spent approximately US\$272 million in REDD+ related activities with 20% channelled towards the UN-REDD programme and 11.4% towards the Congo Basin Forest Fund (REDD+ Survey, 2010).

Prior to 2010, Norway pledged approximately US\$1 billion to REDD+ related activities for the FSF period (Voluntary REDD+ Database, 2013), but the actual financial resources disbursed surpassed the pledge. Norway disbursed approximately US\$1.2 billion, 50% of which was directed to the Amazon Fund and around 9% was allocated to the Forest Investment Partnership (Norwegian Climate Finance Report, 2012).

Towards the end of the FSF period, Norway signed bilateral agreements with Brazil, Guyana, Indonesia, Mexico and Tanzania. In the case of Brazil, Norway has pledged almost US\$1 billion until 2015 through the Amazon Fund (Ogonowski, M, 2012). A partnership between Norway and Indonesia was signed in 2010 and the Norwegian government pledged US\$1 billion (Norwegian Climate Finance Report, 2012). The objective is to support Indonesia in its efforts to “reduce emissions from deforestation and degradation of forests and peat lands” (Norwegian Climate Finance Report, 2012).

Norway has recently announced that it has a budget of approximately US\$ 500 million to spend annually on REDD+ in the period from 2014 onwards, most of which will be directed through the UNFCCC, World Bank and bilateral channels. During COP 19, Norway made a commitment of US\$135 million to the BioCarbon Fund

²⁶ General elections took place in Germany on the 22nd of September 2013.

²⁷ For more information: <http://www.mmechanisms.org/e/>

Initiative for Sustainable Forest Landscapes (BMU, 2013). The proposed strategic intervention would build on Norway's strong political commitment in advancing REDD+ to date, consolidating and further scaling up investment in REDD+.

Spain

Before 2010, Spain had allocated approximately US\$16.5 million for REDD+, with 44% allocated to the FCPF Readiness Fund and 56% to the GEF (REDD+ Survey, 2010). Between 2010 and 2012 Spain spent approximately US\$ 49 million on REDD+ (Voluntary REDD+ Database, 2013).

Although Spain has allocated resources directly to some countries through its International Cooperation and Development Agency, these resources are smaller than other donor countries. In Mexico, for example, Spain allocated approximately US\$55,000. In other cases, such as Senegal, DRC and Indonesia, quantities are unknown (REDD+ Survey, 2010).

Spain's post-2012 finance commitment and its role in scaling up demand for REDD+ emission reductions is not yet clear.

Switzerland

In February 2011, the Swiss Federal Parliament approved an FSF pledge of approximately US\$160 million (UNFCCC Delegation of Switzerland, 2011).

During 2011, Switzerland allocated approximately US\$11 million to support sustainable forest management in developing countries, primarily in the form of grants to the FCPF and Indonesia's REDD+ Presidential Task Force – US\$9.5 million and US\$1.1 million respectively (SECO, SDC & FOEN, 2012). In 2012, Switzerland spent additional finance for REDD+ activities bringing its total contribution for the 2010 to 2012 period to approximately US\$24 million (SDC, SECO & FOEN, 2013). According to the Voluntary REDD+ Database, in 2013 Switzerland allocated around another US\$8 million for REDD+.

Although a smaller contributor than other donor countries, Switzerland is expected to continue to support REDD+.

Participation in a strategic intervention for REDD+ will build on the investments made to date for REDD+ Readiness.

United Kingdom

The UK has committed to provide approximately US\$4.5 billion²⁸ in FSF for climate change from 2010 to 2012, and as of November 2011, US\$1.73 billion had already been spent (ODI, World Resources Institute, 2013). Finance has been channelled through the Environmental Transformation Fund (ETF) in 2010/11 and through the International Climate Fund (ICF) in 2011/12.

Back in 2010, the UK took the decision that over the 2010–2012 period it would allocate 20% of its FSF pledges for action on REDD+ i.e. approximately US\$500 million (PwC, 2011a). Since 2010, UK's ICF has allocated more than US\$456 million to programmes addressing deforestation (DECC, 2013a). From this approximately US\$269 million has been channelled, almost exclusively through the multilateral financing channels – the FIP, Congo Basin Forest Fund, FCPF Readiness Fund and the FCPF Carbon Fund (DECC, 2013a).

Moreover, the UK has deployed forest finance through bilateral partnerships with forest countries and communities. Between 2001 and 2011, DFID allocated almost US\$32.6 million to community forestry in Nepal, US\$129 million has been channelled through its Forest Governance Markets and Climate Initiative, while US\$25 million was recently pledged to a low carbon agriculture project in Colombia (DECC, 2013a).

The UK has also committed to spend US\$4.7 billion by the end of March 2015 for international climate finance, 20% of which is earmarked for forest related activities (ClimateFinanceOptions, 2013). Although no concrete details have been published yet, discussions on a new set of measures to tackle deforestation are taking place, possibly including an Advanced Market Mechanism, as part of its US\$980 million funding 2015 plan (DFID, 2012).

²⁸ Original sources quoted in GBP. An exchange rate of US\$1.63 to £1 is used.

During the COP19 in Warsaw, the UK made a commitment to earmark US\$120 million to the BioCarbon Fund Initiative for Sustainable Forest Landscapes (ISFL), a new initiative addressing deforestation (see Annex 1).

A strategic intervention would build on this strong commitment to post-2012 funding, and is consistent with the current financial commitments made by the UK. The UK also announced a willingness to fund additional programmes of the FCPF Carbon Fund, provided that sufficient credible programmes are approved (BMU, 2013).

Last, but not least, in a joint letter with Norway and Germany, the UK expressed its support for a programme to achieve the goal of zero net deforestation in the Colombian Amazon by 2020 (BMU, 2013).

United States of America

In Copenhagen in December 2009, the United States pledged around US\$1 billion for REDD+ from 2010 to 2012 (Wolosin.M, 2012; Voluntary REDD+ Database, 2013). In 2010, the USA met 25% of its overall pledge, allocating approximately US\$250 million towards REDD+. This was mostly through US AID, and by providing grants to GEF, FCPF and the FIP. In 2011, REDD+ expenditure rose to US\$277 million, while the respective estimate for 2012 is US\$246 million (Wolosin. M, 2012). Overall, during 2010–2012, the USA allocated around US\$ 887 million towards REDD+ (US DoS, 2012). An additional US\$75 million might be directed to support forest and land use projects through the USA Millennium Challenge Corporation (MCC) compact with Indonesia, while during COP 19, the USA announced a pledge of US\$25 million to the BioCarbon Fund ISFL (see Annex 1).

Amongst developing countries, Indonesia and Brazil have been identified by the USA as priority countries for reducing emissions from deforestation. In 2010, 60% of the financing was directed towards Indonesia, Brazil and Peru, with bilateral financing composing 30%. Although no concrete estimates have yet been announced by the Obama administration for the post-2012 period, the strong bilateral cooperation so far

achieved between USA, Brazil and Indonesia can be built on through a strategic intervention in the REDD+ sector.

Deployment of capital: provision of incentives, finance and assistance

The previous section identified past – and potential future – sources of funding for REDD+ at the national level. This section explores a variety of instruments that could be used to spend that money. The instruments described in this section can be grouped into one of three areas: creating incentives, providing finance and risk management, and providing technical assistance and advisory services.

Creating incentives

A key function of the proposed strategic intervention is to improve the risk-return profile of REDD+ investments, up to a point where they can be competitive with other alternative land use investment options over longer time horizons. This can be achieved by improving the incentive to invest in REDD+ in a variety of ways, including through the use of Emissions Reduction Purchase Agreements²⁹ (ERPAs), creating options contracts or setting price floors. By doing so, the strategic intervention would be directly purchasing, or incentivising the purchase of, verified emission reductions. The contracts created could then be used by projects to raise financial capital from the private sector.

Payments could be offered upon the delivery of verified REDD+ emission reductions by forest countries. The facility used for the strategic intervention can act as the buying counterparty, on behalf of donor country governments, in bilateral Emission Reduction Purchase Agreements (ERPAs). An ERPA is a type of contract where the buyer agrees to pay for verified emission reductions from the seller (a more general term often used is an "off-take agreement"). The price, volume or both, of emission reductions, is normally fixed at the date of contract signing.

²⁹ In order to maximise the economic efficiency of funds provided by donor country governments, counterparties to the ERPAs could be determined by an auctioning process.

An ERPA can be signed with private sector REDD+ project developers, with public sector entities implementing REDD+ projects on behalf of, or with, governments. The advantage of signing an ERPA is that it provides a higher degree of certainty over the cash flows associated with the REDD+ projects. This is because price, volume or both, are agreed in advance of the emission reductions being generated or verified. By signing an ERPA, demand for REDD+ emission reductions are directly increased. An ERPA also reduces the risk profile of the investment (as perceived by any financier or investor looking to offer upfront debt or equity capital for the project), which increases access to capital. Furthermore, the ERPA can contribute to collateral for a loan, further increasing access to, and potentially lowering the cost of, capital.

Variations on a standard ERPA may also be able to scale up demand. If the capital is used to pay for only a portion of the total verified emission reductions generated (e.g. 30%), other private sector counterparties may be encouraged to sign ERPAs for the remaining portion (e.g. 70%). This is because other investors may be satisfied that the parties to the intervention have done their proper due diligence. This concept of 'crowding in' investment is similar to how investment by development finance institutions, such as the IFC, can be used as cornerstone investments in a project.

Alternatively, a portion of the payment for the verified emission reductions could be made upfront, rather than all on delivery. This would improve the capital structure of the project (because the project has more initial capital with which to operate), increasing the attractiveness of the project to other debt and equity investors, and increasing access to capital.

To stimulate investment from the private sector and forest country governments, put options could be offered on emission reductions. A put option would give investors or forest countries the right but not the obligation to sell a specified volume of verified emission reductions at a certain price (known as the strike price) at a certain date in the future. There is generally a fee or premium associated with these instruments, but this could be waived.

Whether the option is exercised by the private sector investor or forest country government will depend on the price it is linked to, e.g. the spot price of carbon, and the level of that price when the options expires. This is because, if that price is below the pre-defined strike price, then the put option will be exercised³⁰.

To illustrate how put options work, consider the following example. An implementing state in Peru wishes to sell the emission reductions that will be generated by its jurisdictional REDD+ programme. If political support for the programme is lacking, and buyers are uncertain, the state may struggle to get the jurisdictional REDD+ programme off the ground. To help get the political backing necessary to get the programme off the ground, the state could be sold a put option. For a premium, this put option would guarantee the state a buyer for its emission reductions, at a fixed minimum price, for a finite period of time.

Alternatively, the state may have a set of potential buyers for the emission reductions, but it might be concerned about the impact of a drop in the spot price of carbon on the value of its emission reductions (assuming that at least part of the price is 'floating' – e.g. part determined by the spot price). In this case, the put option could be used to hedge the risk that the price at which the state can sell its emission reductions will drop below an unattractive level.

Normally, the investor would be charged for signing the options contract. Instead, however, this could be waived. If the fee is waived, this can be thought of as a price floor. There are many examples of governments imposing price floors, although not usually by offering put options. A well-known example is the minimum wage, i.e. the minimum price that can be paid for labour. Price floors have also been used extensively within the Common Agricultural Policy (CAP) in the EU to protect farmers from drops in prices.

³⁰ This is assuming it is a European style option. If it is an American style option, the option can be exercised at any point when the reference price is below the strike price before expiry.

The advantage of options contracts and price floors is that they provide a minimum price guarantee for the verified emission reductions generated. This directly increases the demand for emission reductions by ensuring that investors and governments have a strong incentive to invest in a programme or project. This is because they reduce the risk exposure of the investor and governments, and improve the cash flow profile of the programme or project.

Finance and risk management

Finance provided by the public sector varies in purpose, but in this context it is typically provided to lower the cost of capital, increase access to capital, and/or mitigate risks associated with investments in specific activities. Characteristics that determine the most appropriate financial instrument include the Internal Rate of Return (IRR)³¹, the level of upfront financing required, the cash flow profile and risk perception, the legal status of the entity requiring finance and the track record. Most of these characteristics can potentially be improved through the use of financial instruments.

In this context, providing finance involves making money available, upfront, and for it to then be invested in an activity that will later generate forest and land-use emission reductions. It is typically repaid from the ongoing operations and cash flows generated by the activity. Other types of financial instruments include those designed to manage risk in a way that increases access to capital.

Early stage grant funding is commonly used by the public sector for strategic interventions. Grants are often required in situations where activities do not yet generate returns for private investors. They are often used to create the 'enabling conditions' – technical capacity, technology, systems and processes, etc. – that are ultimately needed to attract private sector capital. Loans are also used, but on terms that are more

³¹ Formally, the IRR is defined as the discount rate that makes the total discounted cash flow equal to zero. It is a good indicator of the maximum returns that could be extracted annually from a set of cash flows. Alternatively, it is the maximum possible profit for an investor. If the discount rate applied to the cash flows were any higher than the IRR – or if the proportion of money extracted each year was any greater than the IRR – the cash flow generated by the investment would become negative.

lenient than those offered by commercial lenders. Certain sectors of the market can often struggle to borrow money and can, to a large extent, be excluded from the formal financial system. This can be the case, for example, in the agricultural sector. Loans could be extended to sectors which are important to scaling up demand for REDD+ emission reductions, but have little access to the formal financial system. The loans would likely have concessional interest rates, be available for longer time horizons, and have greater flexibility on the terms of repayment.

Risk management instruments can also be used. They are designed to reduce the risk for a potential investor, making the investment proposition attractive. An example of a risk management tool is a loan guarantee scheme. Loan guarantees ensure that a percentage of loan and interest payments will be repaid if the borrower (e.g. a project developer) defaults. This either allows financial institutions to extend credit to borrowers (e.g. project developers) that they would otherwise not lend to, or to offer a lower rate of interest. There is typically a fee charged for this product but this can often be set at a concessional rate.

Commercial and political risk insurance are other examples of risk management instruments. The former can be used to protect investors against risks which affect the cash-flow of a REDD+ programme or project, such as financial losses arising from forest fires, diseases or droughts. Political insurance would cover financial losses due to political decisions, such as regulatory and/or policy changes. There is typically a fee charged for insurance, but this can again be waived or at least set at a concessional rate.

Advisory and technical assistance services

Given that many forest and land-use projects with emission reduction potential have unproven business models and uncertain revenue streams, the incentives or finance provided could be accompanied by technical assistance or advisory services. Many development finance institutions, such as the IFC, will offer advisory services, for a fee. Financial institutions can also offer technical assistance complimentary to the incentive/finance.

Table 3: Pros and cons of deployment options

DEPLOYMENT OPTIONS	ADVANTAGES	DISADVANTAGES
CREATING INCENTIVES		
Emissions Reductions Purchase Agreements (ERPAs)	A guaranteed buyer provides a high degree of certainty over cash flows, which in turn increases access to capital from public and private sector investors, both for tropical forest countries and project developers. It allows donor governments a degree of clarity over disbursements.	An ERPA is used at a relatively high cost to donor country governments, since their capital is used to purchase a given volume of emission reductions.
Emission reduction put options	These provide projects, programmes or tropical forest countries with a guaranteed minimum price for emission reductions, thus increasing access to capital from public and private sector investors. They are also relatively low cost for donor countries as the option may not be exercised, and capital may not be spent, increasing the financial 'leverage' of public sector funds.	A financial premium needs to be paid by the buyer of the option: capital must be used to take on the risk of pay out if the option is exercised. If the options are not exercised, there is a chance that donor funds will not be 'disbursed'.
Price floor	This gives a guaranteed minimum price for emission reductions, providing more clarity over cash flows and increasing access to capital from public and private sector investors. This is also relatively low cost for donor countries as the price may not reach the floor, and capital may not be spent, increasing the financial 'leverage' of public sector funds.	Donor country governments will not receive a financial premium from those eligible for the price floor: their capital must be used to take on the risk of pay-out if the minimum price is reached.
FINANCE AND RISK MANAGEMENT		
Grants	These can be provided at no cost to forest countries or project developers, and may support early stage project development. Grants may also help 'crowd in' other forms of finance. They are flexible and can be financial or paid 'in kind', for example through technical assistance.	Grants are generally relatively small scale and provide little incentive to invest or purchase emission reductions generated by other parties.
Concessional loans	These provide access to cheaper capital to project developers than is available in the commercial market, with flexible repayment terms, which may support project development.	These do not provide a price for, or incentivise the purchase of, emission reductions, and can require collateral to be posted by project developers.
Loan Guarantees	Loan guarantees provide greater access to capital to project developers, from public and private banks.	These do not provide a price for, or incentivise the purchase of, emission reductions.
Commercial and political risk insurance	Protects projects against operating risks or damaging regulatory changes, improving clarity over cash flows and possibly improving access to capital.	This does not provide a price for, or incentivise the purchase of, emission reductions.
ADVICE AND ASSISTANCE		
Advisory and technical assistance services	These have high potential to leverage finance from public and private investors.	These do not provide a price for, or incentivise the purchase of, emission reductions.

Technical assistance can be provided for a number of reasons. Often it is thought of as a means of reducing the delivery risk of emission reductions, or the risk that the original investment will not be repaid. Technical assistance can also be used to improve the capacity of project developers in accessing REDD+ or related incentives/finance. Project developers may be unable to produce the technical documentation needed to access incentives or finance. For example, evidence from the Brazilian Low-Carbon Agriculture (ABC) fund indicates that project developers are often unable to develop a business plan or loan application that will be accepted by financial institutions. Technical assistance can also be provided to financial institutions to help assess loan applications.

Technical assistance has a high potential to leverage finance from other institutions. UNEP (2008) compared 12 mechanisms to leverage low carbon investment through public finance mechanisms and technical assistance was the only intervention they classified as having 'high' leverage potential.

Management of capital: implementing institutions

This section explores the management of funds generated for the strategic intervention. It outlines the key characteristics of different management institutions, their advantages and disadvantages, and explains how the institutions can be used to make this strategic intervention.

A new multinational fund

A new multinational fund could be created. An example of a new multinational fund created for a similar purpose is the FCPF Carbon Fund. The Carbon Fund is a public-private partnership funded by eight governments, The Nature Conservancy and two private companies³² (The FCPF Carbon Fund, 2012). Operating under the auspices of the World Bank, the Carbon Fund will fund demonstration projects by making payments for REDD+ emission reductions (see Annex 1 for more information).

In general, a new multinational fund requires the support of an international financial institution (IFI) with credibility and a

³² The eight governments are Australia, Germany, UK, Canada, Norway, USA, Switzerland and the European Commission, and the two private companies are CDC Climat and BP Technology Ventures.

proven track record in channelling finance towards developing countries. In the case of the Carbon Fund, this role was played by the World Bank. The support of an IFI in turn requires the political support of its shareholder national governments to create and house a new multilateral fund. In addition, a new multinational fund would have to be able to make transactions quickly between 2015 and 2020. This in turn means that both the decision making and administrative processes must be efficient and transparent; else the funding will be stagnated.

An existing multinational fund

Instead of a new multinational fund, the strategic intervention could be implemented by an existing fund, with one important difference: a scaled-up pool of capital. This could be, for example, the FCPF Carbon Fund, the BioCarbon Fund, the Forest Investment Programme (FIP) or the Global Environment Facility (GEF).

A scaled-up version of the FCPF Carbon Fund could be financed by the same group of current donors, and at a similar scale, to the FSF pledges for the 2010–2012 period (see pages 22–25). This would build on the experience of the FCPF, provide credibility, a track-record (since it operates under the auspices of the World Bank), and possibly generate greater political momentum for REDD+.

Similarly, a scaled-up version of the BioCarbon Fund could be used, which would benefit from many years of institutional experience and provide credibility. The scope of activities suggested in this report also fits well with the strategy of purchasing emission reductions from REDD+ programmes and projects across a landscape of sustainable activities, which is part of the ISFL's proposed strategy (see Annex 1).

Another alternative is to use the FIP. Purchasing emission reductions from its demonstration projects would allow the FIP to build on the finance already pledged and spent by donor country governments, and build on experience in engaging with, financing and setting up REDD+ projects. In addition, and consistent with a key objective of the FIP, the incentives offered by this strategic intervention will stimulate investment from the private sector.

Finally, the GEF helps countries develop capacity for climate change mitigation through SFM, REDD+ and the generation of verified emission reductions. The GEF usually works through implementing agents such as UNEP, and therefore has no publicly visible track record in purchasing emission reductions from REDD+ projects. Nevertheless, it is possible that results-based payments could be provided for verified emission reductions, focussing on countries to which the GEF has already allocated finance for REDD+ Readiness. It is worth noting that the GEF has already considered an AMC as a means of providing a price signal to potential investors in REDD+ (GEF, 2011).

The Green Climate Fund

The Green Climate Fund (GCF) was established at COP16³³ and officially launched in COP17. It is designated as the operating entity of the financial mechanism established under Article 11 of the UNFCCC. The board has full responsibility for funding decisions, it is composed of an equal number of developed and developing country Parties, and the World Bank serves as its interim trustee.

The GCF will finance activities that enhance action on adaptation and mitigation using thematic funding windows, one of which will be REDD+. Although no concrete funding target has been announced or agreed, the GCF seems to be emerging as the Parties' main financial tool for meeting donor country commitments to provide funds of up to US\$100 billion per year by 2020, which will be composed of public and private sector funds. A variety of financial instruments may be used, such as grants or concessional loans (GCF, 2013).

The strategic intervention could operate, or effectively become, the REDD+ thematic funding window of the GCF. This could allow results-based payments for REDD+ emission reductions to be tested between now and full operation of the GCF by 2020, generating a wide variety of lessons before full implementation. Notably, it would also build an understanding of how to engage the private sector – a shared goal of the GCF and this strategic intervention. Given that the scale of funding for the GCF is

of the order of US\$ tens of billions per year by 2020, and this strategic intervention needs financing of the order of US\$4–16 billion for the period between 2015 and 2020, the possibility of using this funding window to simultaneously test the operation of the GCF and scale-up demand for REDD+ emission reductions is an attractive proposition.

Pilot crediting mechanisms

Within an international emissions trading market, REDD+ emission reductions may be used as offsets through a crediting mechanism (similar to how the CDM currently operates). Before an international market exists, however, some countries are piloting their own crediting mechanisms. This bottom-up approach links pilot crediting mechanisms with the tropical forest countries that generate REDD+ emission reductions from forest and land-use activities.

Japan's Joint Crediting Mechanism (JCM) (see Annex 1) is one example of a pilot crediting mechanism. The JCM promotes climate change mitigation through bilateral agreements with forest countries. Emission reductions generated by forest countries are evaluated and, if approved, are subsequently certified and contribute towards Japan's emission reduction target (Government of Japan, 2013).

The strategic intervention could be used to scale up the JCM, and replicate it in other countries, purchasing REDD+ emission reductions through crediting mechanisms. Funding would be channelled from donor country governments through their pilot crediting mechanisms, towards tropical forest countries, in exchange for REDD+ emission reductions generated from forest and land-use activities. Alternatively, REDD+ emission reductions could be sold through a new international sectoral crediting mechanism, such as a crediting mechanism that is currently being discussed by the aviation sector. This can also be linked to domestic trading schemes, in tropical forest countries, that become operational before 2020. As an example, consider Brazil, which may establish its voluntary Brazilian Emissions Reduction Market (BERM) in the interim period. After the creation of this voluntary cap-and-trade scheme, the various sectors described in the

³³ See UNFCCC Decision 1/CP.16

National Plan on Climate Change (NPCC) could use the emission reductions to meet domestic obligations under the BERM. If emission reductions remain after domestic obligations for polluters have been met, these additional emission reductions could be passed to the other public and private investors, or sold in to the international market, through one or more bilateral crediting mechanisms.

National REDD+ funds

The funding for this strategic intervention could also be channelled through national level funds in tropical forest countries. National REDD+ funds provide country-wide funding for climate change mitigation and adaptation activities. For example, the Fund for REDD+ in Indonesia, known as FREDDI, currently has a commitment of US\$1 billion from Norway to spend in Indonesia. It expects to mobilise an additional US\$2 billion from other public sources, and later in its life it hopes to transition to sourcing more private sector capital.

FREDDI is a "fund of funds", meaning that it distributes money to smaller funds rather than directly to projects. Those subsidiary funds can create joint ventures with other funds or companies and act as disbursement vehicles. The creation and operation of FREDDI has three phases: readiness, infrastructure and capacity building; aggregation of emission reductions; and performance-based payments (Sari, A, 2013).

In the context of the FREDDI, the strategic intervention would effectively provide capital for the third phase, providing results-based payments. This will increase demand for national REDD+ emission reductions in Indonesia, and leverage additional investments from both the domestic and international private sector – an objective of both FREDDI and the strategic intervention (Sari.A, 2013).

However, given that a lack of demand for REDD+ emission reductions is a global problem, funding would need to be channelled through many national REDD+ funds in many tropical forest countries. From the perspective of the tropical forest countries, however, it grants greater

levels of autonomy and national sovereignty over REDD+ funding directed at forest and land-use activities.

Public-private partnerships

Similar to the GAVI (see page 19), a public-private partnership (PPP) could be established. The PPP could be composed of a broad partnership of REDD+ donor country governments, forest country governments, and the private sector, channelling money through a broad range of entities such as funds, governments, and NGOs.

The PPP would focus on purchasing, or incentivising the purchase of, REDD+ emission reductions across a variety of forest and land-use activities in tropical forest countries. It could be underpinned by an incentive mechanism, such as the GAVI's AMC. The PPP could provide an economic incentive to private investors, as well as generating funds from the countries with which it works and potentially even stimulating private sector participation in the PPP itself.

Another example is the Private Infrastructure Development Group (PIDG). It was established in 2002 as a coalition³⁴ focused on lowering obstacles to private sector investment in infrastructure development in developing countries, whilst also promoting poverty reduction and economic growth. With similar political backing, a PIDG-like coalition could be created to encourage private investment in REDD+, whilst also promoting the poverty reduction and economic growth.

³⁴ The PIDG Members are: Austria, Germany, Ireland, Netherlands, Sweden, Switzerland, the UK, the World Bank and the International Finance Corporation.

Figure 2: Possible options for components of the strategic intervention

GENERATION OF CAPITAL	PROVISION OF INCENTIVES, FINANCE AND ASSISTANCE	IMPLEMENTING INSTITUTIONS
POSSIBLE SOURCES	CREATING INCENTIVES	POSSIBLE IMPLEMENTERS
Germany	ERPAs	Existing multinational funds
Japan	Put options	The GCF
Norway	Price floors	Pilot crediting mechanisms
UK		National REDD+ funds
USA	FINANCE & RISK MANAGEMENT	PPPs
Switzerland	Grants	
	Concessional loans	UNLIKELY IMPLEMENTERS
UNLIKELY SOURCES	Loan guarantees	New multinational funds
Spain	Commerical insurance	
Australia	Political risk insurance	
	ASSISTANCE	
	Technical assistance	
	Advisory services	

Summary of options for the strategic intervention

It is important that the REDD+ funding so far provided by donor country governments, and the efforts already made by forest countries in preparing for REDD+, do not go wasted. In order to ensure that REDD+ as a mechanism is successful, capital must be raised to create the incentives needed to attract private sector finance and catalyse further action by forest country governments. Otherwise, the successful operation and longevity of the mechanism is under threat.

Generation of capital

The FSF period has been central to the successful evolution of REDD+. Eight donor country governments have pledged between US\$3 and US\$4 billion in this period. Most funding has, rightly, been directed towards REDD+ Readiness, and almost US\$3 billion has been disbursed to developing countries. In addition, partnerships at the scale of billions of dollars have been established for the post-2012 period.

Donor governments have started to move past REDD+ Readiness, raising ambition and showing political leadership for the post-2012 period. Some money is starting to flow towards results-based payments for emission reductions from forest and land-use activities generating REDD+ emission reductions. However, financial commitments by donor country governments are not providing large enough financial incentives for tropical forest countries to continue to tackle emissions from deforestation and forest degradation. There is an order of magnitude difference between the demand and supply of REDD+ emission reductions, between 2015 and 2020, if tropical forest countries are able to meet emissions reduction targets.

During COP18, Germany, UK, USA, Norway and Australia made a joint statement emphasising the significant potential of REDD+ in combatting climate change. The five countries agreed to ensure more efficient implementation of REDD+³⁵. Providing capital for a strategic intervention, which will generate a transaction value at a scale similar to the pledges for the FSF period, would be one means of achieving this goal.

³⁵ For the full statement, see: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/70094/7126-joint-statement-tackling-deforestation.pdf

As an example, assuming that public sector capital can leverage up to three times the amount in private sector investment, if US\$4 bn of public sector capital were used to stimulate demand, a transaction value of US\$4–12 bn could be generated. This transaction value is equal to that needed to fill the supply-demand gap, in the scenario in which 25% of forest and land-use emission reductions are channelled through a REDD+ trading mechanism. This may allow some countries to realise a carbon-based, or other, return on the investments made so far in REDD+ Readiness, whilst also strengthening their partnerships with tropical forest countries.

Providing incentives, finance and assistance

A key function of the strategic intervention is to improve the risk-return profile of investments in forest and land-use activities with emission reduction potential, up to a point where they are competitive with other alternative land use options over longer time horizons. This can be achieved by improving the incentive to invest in activities that produce REDD+ emission reductions, including through the use of ERPAs³⁶, creating options contracts or setting price floors. By doing so, the intervention would be directly purchasing, or incentivising the purchase of, verified REDD+ emission reductions. This would then allow projects to raise financial capital from the private sector.

Clear price signals are important for investors as they influence the financial profile of an investment. The absence of a clear price signal brings greater uncertainty over the probability of the projected cash flows materialising, resulting in greater financial risk and a lower chance that the risk-adjusted returns will exceed the investor's hurdle rate³⁷. This will in turn reduce the likelihood of investment.

Incentives have been successfully used in a range of sectors facing similar challenges to REDD+, such as high

³⁶ In order to maximise the economic efficiency of the funds provided by donor country governments, counter-parties to the ERPAs could be determined by an auctioning process.

³⁷ A simple way to conceptualise this is that a project that has a projected return of 10% per annum with no risk is preferable and more likely to take place than a similar project (all other things being equal) with a similar projected return of 10% per annum and with high levels of risk.

upfront costs, long operating lives, unproven commercial models and opaque market price and demand signals. A well-known example is the Global Alliance for Vaccination and Immunisation (GAVI), which through its AMC mechanism, makes a commitment to buy a given volume of vaccines at a given price at a future date (see page 19).

In some circumstances, finance, or advisory or technical assistance could be directly offered to the project, in addition to, or instead of, incentives.

Implementing institutions

By building on existing multinational funds, mechanisms or partnerships, experience and lessons are shared, and credibility and track-record can also be improved. In all cases, however, a significant scaling-up of financial resources is necessary to plug the supply-demand funding gap.

All options for managing or channelling the funding require political support. However, scaling-up an existing fund may require less political support than, say, creating a new multinational fund. By scaling-up the FCPF Carbon Fund, or the BioCarbon Fund, for example, political support may be easily justified: the purchase of REDD+ emission reductions is already a core goal.

The strategic intervention could also operate through the REDD+ thematic funding window of the Green Climate Fund (GCF). This would allow results-based payments for REDD+ emission reductions to be distributed between now and the time of full operation of the GCF. It would also contribute to the learning curve and support early engagement of the private sector, whilst the financial resources needed to scale up demand in the interim period may amount to a fraction of the GCF's expected scale.

Alternatively, a model similar to the GAVI might be used: a public-private partnership to provide incentives, with public and private sector actors forming a strategic, temporary partnership, to address the lack of demand. Or pilot crediting mechanisms could be used to channel funding from

donor country governments to tropical forest countries. This could also link directly in to national level emissions trading schemes, such as the BERM proposed for Brazil, scaling up demand in the interim period whilst also helping nations achieve their sectorial emission reduction targets.



Annex I: Interim sources of demand

Voluntary market

In the voluntary market the transactions that take place are generally individually negotiated, 'over the counter' deals. Emissions reductions are generated from projects of varying characteristics and deal structures. This differs from many other financial or agricultural commodity markets, where the majority of transactions involve standardised goods, and where price discovery is typically through the relationship between supply and demand.

Buyers of emission reductions in the voluntary forest carbon market generally fall into two broad categories. The first consists of buyers who retire the credits (after which they can no longer be used by anyone else). This is often done for reasons of personal or corporate social responsibility, which might include offsetting. The second category of buyers is often called pre-compliance. This category is typically dominated by the private sector, and the motivation of these buyers is largely financial. They buy high quality credits³⁸ in the voluntary market, hoping that they will become eligible for use as offsets in future compliance regimes. They are bought at a value now that is cheaper than the expected price in a future compliance regime. Others often buy credits to stimulate their learning curve in light of future compliance obligations.

The volume of forest carbon credits transacted in 2012 was 28 MtCO₂e. This is an increase of 9% from 2011 in terms of volume, but the 2012 market value of US\$216 million is 8% lower than its 2011 value of US\$237 million. This is because there was a lower average forest carbon price of US\$7.8/tCO₂e in 2012. Project developers also reported a total of 30 MtCO₂e of credits that remained unsold in their portfolios, worth an additional of US\$236 million, meaning that the forest carbon market in 2012 transacted 48% of its potential value (Ecosystem Marketplace, 2013).

Forest carbon credits in 2012 came from three main categories of forest carbon projects: afforestation/ reforestation, REDD+ and Improved Forestry Management.

Project developers also predicted a volume of 1.4 billion tonnes of supply over the next five years – 93% of which is projected to come from REDD projects.

Compliance markets

The European Union Emissions Trading System

The European Union Emissions Trading System (EU ETS), established in 2005, is the world's first mandatory cap-and-trade scheme. It operates in all 28 EU countries plus Liechtenstein, Iceland and Norway. It reduces GHGs from power and heat generation, energy-intensive industry, and commercial intra-EU aviation (European Commission, 2013).

The EU ETS allows participants to use international credits from CDM and Joint Implementation (JI) projects as offsets in order to fulfil their EU ETS obligations. Credits from afforestation or reforestation projects are however not accepted. The EU recently adopted a Decision to integrate emissions from LULUCF activities in to the EU's GHG reduction commitments.³⁹ How this integration will happen, and whether LULUCF (and REDD+) emissions will be incorporated in the EU ETS, is still uncertain, and is unlikely to become any clearer in the near future.

Australia's Carbon Pricing Mechanism

Australia has a target to reduce GHG emissions unconditionally by 5% on 2000 levels by 2020 and by 25% by 2020, if the world agrees to an ambitious global deal (Australian Department for the Environment, 2013). The Carbon Pricing Mechanism (CPM) will help Australia achieve its goal. It covers large industrial entities (Ecofys, 2013), and its implementation is divided into two periods: 2012-2015 when the carbon price is fixed; and 2015-2020 when the carbon price will float. At the time of writing the Australian Government is planning to repeal the CPM.

The Australian government allows offsetting through the domestic Carbon Farming Initiative (CFI), or through international offsetting mechanisms (Clean Energy Regulator,

2013 and 2013a). Eligible international mechanisms include the CDM and JI. There are currently no plans to include activities that fall under the REDD+ framework, although this could be allowed if a mechanism is created under a future climate agreement of the UNFCCC, and if the CPM is not repealed.

New Zealand's Emission Trading Scheme (NZ ETS)

The mandatory NZ ETS started operating in 2008. It is an uncapped trading scheme, but participants must surrender allowances based on individual emissions. Participants in the NZ ETS can use international offsets to meet their obligations, using the JI or CDM. However, New Zealand has not set an emissions target under the second commitment period of the Kyoto Protocol (Ecofys, 2013). As a result, there are no plans to allow REDD+ emission reductions into the scheme, whether as part of an international regime under the UNFCCC or otherwise.

California's Cap-and-Trade Program

California's Cap-and-Trade Program became operational in January 2013. It reduces GHGs from a wide range of economic sectors, and from 2015 onwards it will increase its scope to cover about 85% of California's GHG emissions (Ecofys, 2013).

Compliant entities are allowed to meet up to 8% of their compliance obligation using offsetting in each compliance period. International sector-based offset credits, including those from REDD+ emission reductions, if adopted, would cover at most 2% of the total compliance obligation in the first compliance period, and up to 4% in the second and third compliance period (ROW, 2013). If all international offset credits supplied to the California scheme are REDD+ based, this amounts to a total potential demand of around 80 MtCO₂e over 2013–2020 (Ecofys, 2013).

However, current regulations governing California's Cap and Trade Program do not allow the use of international REDD+ offset credits. The Governors of California, Chiapas (Mexico) and Acre (Brazil) created the REDD Offset Working

Group⁴⁰ (ROW) to draft recommendations on how to include REDD+ offset credits from jurisdictional programs in California's Cap-and-Trade Program (ROW, 2013).

Québec's Cap-and-Trade Scheme

Operating since 2013, the Québec Cap-and-Trade System covers 80 sites, mainly in the industrial and electricity sectors (Québec, 2013). Market participants can fulfil up to 8% of their compliance obligations using domestic offset credits (American Carbon Registry, 2012). There are currently no plans to allow international offsets.

Regional Greenhouse Gas Initiative (RGGI) – USA

Operating since 2009, RGGI is the first mandatory emissions trading scheme in the United States, covering the CO₂ emissions from power plants in the Northeast and Mid-Atlantic USA States⁴¹. Regulated power plants are currently allowed to use domestic offsets to meet up to 3.3% of their compliance obligations, which can increase to 5% and 10% if carbon prices rise (RGGI, 2013). There do not appear to be any plans to allow international offsets in the scheme.

Japan Cap-and-Trade Schemes

Two sub-national cap-and-trade schemes are currently operating in Tokyo and Saitama. Only domestic offsets are eligible in the sub-national schemes. However, the Japanese Government is considering a national ETS, in which REDD+ credits may be included. The Government is in the process of setting up a Joint Crediting Mechanism, or Bilateral Offset Credit Mechanism. Under bilateral agreements between Japan and a developing country, Japanese companies will be able to obtain carbon credits by distributing low carbon technologies and services. The details of the instruments are still being developed, but wide sectoral coverage, including REDD+, is a possibility (New Mechanisms Information Platform, 2013).

³⁸ Credits that achieve the best possible type and number of certifications in the voluntary market.

³⁹ See Article 1 in (European Parliament, 2013).

⁴⁰ Housed under the GreenTech Leadership Group (GTLG), the Forests 4 Climate Initiative is the redesigned version of ROW. From early 2014 it will become an informational source and show how California's ETS can prevent deforestation and forest degradation at a global level.

⁴¹ Covering the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. New Jersey left the scheme in November 2011.

Other Initiatives

The Swiss ETS covers large-scale industry, and is being linked with the EU ETS. The CDM and JI can be used to meet obligations but with the same restrictions as those in the EU ETS. Currently in development, South Korea's mandatory ETS will begin operations in 2015. Until 2020, only domestic offsets will be eligible, with international offsetting allowed from 2020.

China's 12th Five Year Plan (2011-2015) establishes pilot ETSs in seven provinces and cities with the purpose of gradually establishing a national carbon trading market. At the moment, two schemes are in operation (Reuters, 2013) while the rest are in the design and planning stages with no cap officially announced (Australian Parliament Library, 2013). All ETS pilots are expected to allow only the use of Chinese Certified Emissions Reductions (CCERs) offsets.

Brazil's National Policy on Climate Change (NPCC) sets the stage for the voluntary establishment of a Brazilian Emission Reductions Market (BERM). A working group composed by the governments of Acre and Rio de Janeiro, Rio de Janeiro's Bolsa Verde and the Brazilian Development Bank (BNDES) is examining various options to move the plans forward. Allowing domestic offsetting using REDD+ offset credits from the Amazonian States is an option, but whether this will be implemented is still unclear.

In April 2012 Mexico passed a General Climate Change Law, with the possibility of developing a voluntary ETS. Since then, no further plans have been made public. Costa Rica aims to achieve carbon neutrality by 2021. Developing a domestic carbon market, along with a carbon offset mechanism with REDD+ emission reductions, is central to Costa Rica's sustainability objectives, but further details have yet to emerge. In addition, Indonesia is considering the launch of a voluntary ETS as one of several policies to cut its greenhouse gas emissions, but no further plans have been made public (Reuters, 2013a).

Non-market sources

Whilst most of the post-2020 demand for REDD+ emission reductions is expected to come from compliance or voluntary markets, in the current interim period non-market sources of demand also play an important role.

If these non-market sources are capitalised with Official Development Assistance (ODA), it may not be permissible to pass on the emission reductions to the donor countries for their own compliance (instead they would be retired). Whereas if the investors are from the private sector or NGOs, the emission reductions may be used as offsets; at which point they are considered part of the voluntary market.

The BioCarbon Fund

The BioCarbon Fund is housed within the Carbon Finance Unit of the World Bank. It purchases emission reductions from projects that include afforestation, reforestation, REDD+ and sustainable land and forest management (BioCarbon Fund, 2013). The BioCarbon Fund has committed over US\$90 million since 2004 to existing projects. The majority of its money has been spent on purchasing emission reductions generated from reforestation and afforestation projects. It has also purchased a small quantity of what the BioCarbon Fund classifies as REDD+ emission reductions, equating to 430,000 tCO₂e (BioCarbon Fund, 2013a).

In COP19, the Fund launched a new US\$280 million Initiative for Sustainable Forest Landscapes (ISFL), which will be used to support tropical forest countries' efforts towards REDD+ implementation (mainly using grants and technical assistance), as well as to buy emission reductions from projects that reduce emissions from across a landscape, similar to the forest and land-use approach (BioCarbon Fund, 2013b).

If we assume that half of the US\$280 million in ISFL is used for the purchase of REDD+ emission reductions, this gives a future demand potential for REDD+ emission reductions of just under 28.5 million tCO₂ (assuming a price of US\$5/tCO₂ and including demand from the existing REDD+ projects funded from Tranche 2).

FCPF Carbon Fund

The Forest Carbon Partnership Facility (FCPF) hosts two funds – the Readiness Fund (see page 9) and the Carbon Fund. Only the Carbon Fund can purchase REDD+ emission reductions (and only emission reductions that are 'nested' within the country's national REDD+ strategy). The FCPF Carbon Fund has US\$219 million deposited in the fund, at the time of writing (CFU, 2013), with an additional US\$ 180 million pledged to the Readiness and Carbon Funds by Norway, Finland and Germany in January 2014 (BMU, 2013). At the time of writing, only Costa Rica had submitted a request for payments for emission reductions from the Carbon Fund. It has so far accessed around US\$0.3 million, but has not yet received payments for emission reductions (FCPF, 2013; CFU, 2013).

Assuming that the entire US\$219 million that has been pledged to the fund can purchase REDD+ emission reductions, this gives a total demand for emission reductions from the FCPF Carbon Fund of just under 44 million tCO₂e (assuming a price of US\$5/tCO₂).

REDD Early Movers

The REDD Early Movers (REM) programme buys REDD+ emission reductions at the national or sub-national level. REM only pays governments that already have the technical capacity in place to provide verified emission reductions – i.e. those that have passed the 'Readiness' phase – called early movers. It provides finance for these early movers in the interim period between now and a future climate agreement under the UNFCCC (BMZ, 2012).

The REM is capitalised with a total of approximately US\$45 million, and it has already agreed to spend around US\$26 million⁴² buying 8 million tCO₂ from the State of Acre over a four year period (BMZ, 2012; KfW, 2013; Governo do Acre, 2013). An additional US\$ 16 million was pledged at COP 19 (BMU, 2013). If we assume that the REM buys all emission reductions at the same price as it paid for Acre (around US\$3.26/tCO₂), then the US\$45 million equates to a total demand potential of around 13.5 million tCO₂e.

⁴² €32.5 million and €19 million, respectively, at an exchange rate of US\$1.37 to €1.

The Norway–Indonesia Letter of Intent

The Norway–Indonesia Letter of Intent (LoI) established a climate change partnership between the two countries, focussing on REDD+. The purpose of the partnership is to contribute to a significant reduction in GHG emissions from deforestation, forest degradation and peatland conversion, including through collaboration in supporting the development and implementation of Indonesia's REDD+ strategy.

The partnership is divided into three phases: (i) Phase 1 – Preparation, preparing for the implementation of Indonesia's national REDD+ strategy; (ii) Phase 2 – Transformation, initiating mitigation action through provincial REDD+ pilots and preparation for the Contribution-for-Verified Emission Reduction Phase; and (iii) Phase 3 – Contributions for Verified Emission Reductions, where Norway (and potentially other partners having joined the partnership), channel financial contributions into the Indonesia REDD+ financial instrument.

Norway has pledged US\$1 bn as part of the LoI, and up until now US\$40 million has been disbursed: US\$30 million for Phase 1 and US\$10 million⁴³ for the transition to Phase 2. There is US\$160 million remaining for Phase 2. This leaves approximately US\$800 million which can be used for Phase 3, i.e. as financial contributions for verified emission reductions from Indonesia, which was due to be initiated in 2014.

As of January 2014, a published estimate for the proportion of the US\$800 million that will be used to create demand for REDD+ emission reductions in the interim period for Indonesia is not yet available (i.e. the proportion of the US\$800 bn that will be used to purchase tonnes of REDD+ carbon from Indonesia between 2015 and 2020). Since the LoI is likely to be a large volume of tonnes relative to the other sources of demand that are available globally, it is important to also have a reliable estimate of the carbon price when estimating the total potential demand available; as yet a target carbon price has not yet been agreed.

⁴³ Pers. comm. Bapak Agus Sari

Although the Lol could be a large source of demand for REDD+ emission reductions in the interim period for Indonesia, publicly available information is currently insufficient to make a reliable estimate of the Lol's contribution to the total potential demand for REDD+ emission reductions, globally, between 2015 and 2020. It is for this reason that it is not included in the estimate of global demand for REDD+ emission reductions (see Table 2).

The Brazil Amazon Fund

The Amazon Fund raises donations for non-reimbursable investments in the prevention, monitoring and combatting of deforestation, as well as promoting the preservation and sustainable use of forests in the Amazon. Approximately US\$ 785 million has already been deposited through grants (see Table 1), and US\$95 million has been disbursed. A substantial amount is still undisbursed, but since the Amazon Fund does not monetise the emission reductions generated by the projects that it invests in, it seems unlikely that any of the remaining funding will be used to stimulate demand in the interim period up to 2020. For this reason, demand from the Amazon Fund was not included in the total potential demand for REDD+ emission reductions available globally (see Table 2).

Annex 2: Indicators of success

The indicators of success could include the following non-exhaustive list:

Efficiency

- Cost of CO₂e/tonne that has been abated
- Leveraging ratio of private sector funds to public sector funds
- Ratio of funds committed to notional contract size outstanding⁴⁴
- Administration costs as a percentage of assets under management
- Level of coordination of the intervention with other funding mechanisms

Effectiveness

- Tonnes of CO₂e abated (or other measure describing scale of outcomes over a set time period)
- How well the mechanism conforms to the principles of Transparency, Longevity and Certainty (TLC)
- Speed at which funds are deployed or committed
- How well the strategic intervention fits forest country policy
- Livelihoods positively impacted
- Multiplier/spillover effects

Equity

- Degree to which social and environmental standards are met
- Distribution of benefits across all suppliers of emission reductions
- Delivery of social co-benefits

⁴⁴ 'Notional contract size' refers to the number of tonnes of carbon within any contract. Therefore, the more tonnes of carbon it purchases given the funds available, the more economically efficient the intervention will be. In other words, the lower the ratio of the funds committed to the outstanding contract size, the more economically efficient the intervention.

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