



WWF GUIDE TO BUILDING REDD+ STRATEGIES

Achieving REDD+

INTERVENTION STRATEGIES TO ADDRESS THE DRIVERS OF DEFORESTATION AND FOREST DEGRADATION



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Key Messages

- Addressing the drivers of deforestation and forest degradation will make or break a country's REDD+ strategy. All other REDD+ building blocks may be in place, and still, if we are not successful in addressing drivers, no REDD+ will be achieved.
- National and subnational intervention strategies to reduce deforestation and forest degradation (DD) should begin now, based on current knowledge, while, at the same time, we should make concerted efforts to scale up our understanding of drivers. This should include understanding how they work, as well as understanding the costs and effectiveness of different intervention strategies to address them.
- Intervention strategies should be developed and applied in a participatory way involving all relevant sectors and recognizing local and regional contexts.
- Governments have a major responsibility in forging solutions and in identifying and undertaking effective intervention strategies, including the harmonization of agriculture, energy and forest policies and addressing cross-sectoral conflicts among public policies and among sectoral priorities and activities.
- A range of intervention strategy best practices are already available. Many of these intervention strategies have been used extensively in forest conservation activities in the past, whereas some are more innovative in their approach. Matching these practices to local contexts is the primary job in developing effective REDD+ intervention strategies.

INTRODUCTION

Perhaps the simplest way of looking at drivers of deforestation and forest degradation (DD) is through two broad categories (adapted from Geist and Lambin, 2002). **Direct drivers** are activities or actions at the forest frontier that directly impact forest cover. **Indirect drivers** are socioeconomic processes that shift the way in which people behave at a macro level, and would affect the direct driver (see Table 1).

Some activities can act as both direct and indirect drivers. For instance, it has long been known that opening new roads into remote forested areas accelerates deforestation. At work here is a modest direct driver impact, due to the road construction, plus a much larger indirect driver impact as the new roads give logging and agriculture access to areas previously isolated.

WEBINAR VIDEO: A FRAMEWORK FOR DEFINING AND MONITORING FOREST DEGRADATION

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TABLE 1: DIRECT AND INDIRECT DRIVERS OF DEFORESTATION (ADAPTED FROM GEIST AND LAMBIN, 2002)

DIRECT DRIVER: LAND-USE CHANGES	EXAMPLE
Agricultural	Permanent cultivation, Shifting cultivation, Cattle ranching
Wood extraction	Timber, Pulp, Fuelwood, Charcoal
Infrastructure	Transport (e.g. roads, rail), Settlements, Mining, Hydropower
INDIRECT DRIVER: LAND-USE CHANGES	EXAMPLE
Demographic	Population growth, Migration, Cultural attitudes
Economic	Market growth, Economic structures (e.g. agricultural subsidies)
Technological	Agro-technical change
Policy/Institutional	Formal policies, Policy climate, Property rights, Land tenure
OTHER	EXAMPLE
Other	Biophysical drivers, Social drivers (e.g. war), Environmental factors

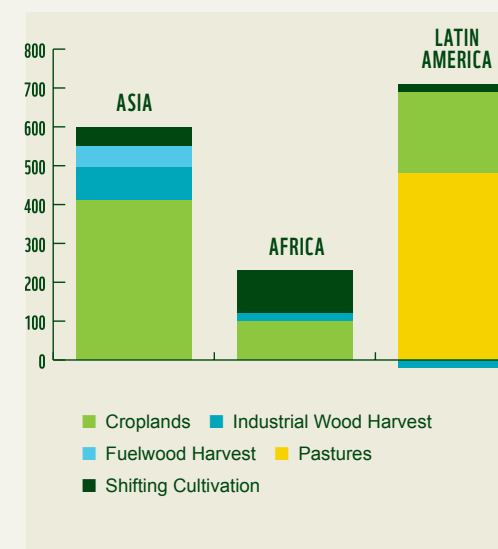
TABLE 2: MAIN DIRECT DRIVERS OF DEFORESTATION AND FOREST DEGRADATION: LAND-USE CHANGES AND LAND-USE ACTIVITIES (ADAPTED FROM HOUGHTON, 2010)

DIRECT DRIVER: LAND-USE CHANGES	IMPACT ON FORESTS AND EMISSIONS
Croplands	The conversion of forests to croplands has been responsible for the greatest emissions of carbon from land-use change. With growing demand for agricultural commodities (primarily soy and palm oil) the area of land used for crops may keep growing in the future.
Pastures	The conversion of forests into pastures is also a major source of carbon emissions, although in some cases pastures have expanded into savannahs with lower emissions. Once pastures are established, emissions per hectare from cattle ranching are lower than emissions per hectare from croplands because pastures are generally not cultivated, and thus little soil carbon is lost to the atmosphere.
Shifting cultivation	Shifting cultivation is a rotational form of cropping, where crops alternate with periods of forest recovery (fallow). On average, the carbon stocks per hectare are smaller under shifting cultivation than in forests but larger than in permanent croplands. Thus, the emissions of carbon per hectare of shifting cultivation are less than they are for conversion of forest to cropland or pasture.
Industrial wood harvest	The net annual emissions of carbon from wood harvest include both the emissions from commercial wood and fuelwood harvest and the uptake of carbon in forests recovering from harvests.

From drivers to deforestation, forest degradation and GHG emissions

Several studies have aimed to quantify the impacts of the different drivers of deforestation both on forests and on greenhouse gas (GHG) emissions (Geist and Lambin, 2002, Union of Concerned Scientists, 2011, DeFries et al., 2010). These studies focus on direct drivers, because direct drivers, particularly land uses and land-use changes, can be measured both spatially and temporally. Using this approach, the dominant drivers of DD at global and regional scales are listed in Table 2.

Using these four categories, Figure 1 shows the carbon emissions from tropical deforestation across Asia, Africa and Latin America.

FIGURE 1: CARBON EMISSIONS FROM TROPICAL DEFORESTATION AND FOREST DEGRADATION IN ASIA, AFRICA AND LATIN AMERICA AVERAGED OVER THE PERIOD 1990-2005. UNITS ARE IN MTCO₂ PER YEAR (UNION OF CONCERNED SCIENTISTS, 2011).

Emissions from DD vary significantly by region. Deforestation in Latin America is being driven primarily by large-scale (commercial) expansion of pastureland, with cattle ranching historically being the single greatest driver of forest conversion, accounting for around 500 MtCO₂/year (Houghton, 2010). A second significant driver of deforestation in Latin America is large-scale agricultural expansion, with commercial crop production dominated by soy for oil and livestock feed. In the future, demand for biofuels (derived from soy and other crops) may also become a growing DD factor in Latin America.

Of the three regions, Asia has the least total forest cover but has the highest rate of deforestation (Hansen et al., 2008). Much of the forest loss in Asia is being driven by large-scale croplands (primarily palm oil) and timber plantations. Palm cultivation, in particular, is significant in Indonesia and Malaysia; together these countries accounted for nearly 85 per cent of 2010 global production (Union of Concerned Scientists, 2011). In Indonesia, palm cultivation and timber extraction are to some extent undertaken by the same companies, for whom timber supplies an early source of profit from land on which palm plantations will take years to grow. As such, these drivers are considered to be tightly linked in this region (Gaudioso and Magrini, 2011, Fisher et al., 2011).

In contrast to other developing regions, the primary driver of deforestation in Africa is shifting cultivation (responsible for approximately 60 per cent of deforestation on the continent), and estimates suggest larger-scale cropland is responsible for another 10 per

cent (Rademaekers et al., 2010). The second major driver of deforestation in Africa is wood extraction for timber, fuelwood and charcoal production. Timber production is growing, with some estimates placing logging concessions at nearly 30 per cent of central Africa's land area (Rademaekers et al., 2010), including 45 per cent of Gabon's territory. In the Democratic Republic of Congo, UN-REDD (2012) finds that the most important direct drivers of deforestation include slash-and-burn agriculture, artisanal logging, firewood collection, charcoal production and mining activities.

Looking forward, drivers of deforestation in tropical Africa seem poised to change, and a recent study of deforestation trends in the Congo Basin (Megeevand et al., 2013) suggests that new drivers of deforestation in the Congo Basin will include improved transportation infrastructure, improved agriculture technology, increased international demand for meat and biofuels, and a decrease in woodfuel consumption.

It is also important to note that there are significant differences between what drives deforestation and what drives degradation. As already mentioned, agriculture (both commercial and subsistence), ranching, mining, infrastructure and urban expansion are all major direct drivers of deforestation.

Drivers of forest degradation, on the other hand, include logging for commercial and subsistence use, uncontrolled fires, livestock grazing, fuelwood collection and charcoal production. For example, timber extraction and logging account for more than 70 per

cent of total degradation in Latin America and Asia, whereas fuelwood collection and charcoal production are the main degradation drivers in Africa (Hosonuma et al., 2012).

Studies such as those quoted above serve as broad estimates of regional drivers of DD across the tropics, but more spatially explicit data using image classification and GIS analysis will be needed to develop a full assessment of drivers and to support the design of intervention strategies to address

them at national or subnational levels. Many countries have already begun to identify and assess national drivers of deforestation as part of their national REDD+ readiness plans. These efforts will need to be scaled up and reinforced in the coming years to provide a coherent, cross-sectoral and scientifically rigorous basis for policy interventions to address the drivers of DD—not only national and direct drivers but also international and indirect drivers (Kissinger et al., 2012).



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INTERNATIONAL POLICY CONTEXT



In 2010, at the 16th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP 16) in

Cancun, it was decided that parties should find “effective ways to reduce the human pressure on forests that results in greenhouse gas emissions, including actions to address drivers of deforestation”.¹ Developing countries were also asked to “address, inter alia, the drivers of deforestation and forest degradation” when developing and implementing their national strategies or action plans.²

Recognizing that very little information is available on how to address these drivers, a work programme was established at COP 16 to:

Identify land use, land-use change and forestry activities in developing countries, in particular those that are linked to

the drivers of deforestation and forest degradation; identify the associated methodological issues to estimate emissions and removals resulting from these activities; and assess the potential contribution of these activities to the mitigation of climate change.

While it was originally envisaged that this programme of work would conclude at COP 18 in Doha, in December 2012, this agenda item has been prolonged through 2013.

A further round of submissions was requested from parties and observers regarding their views on this issue, and several parties met again in Bonn in June 2012. But beyond distributing some important analytical work commissioned (e.g. *Kissinger et al., 2012*), little further guidance was forthcoming in this process. There remains a tension in the negotiations regarding the need to address the drivers of DD and concerns among some countries that doing so may negatively impact their economic prospects.³

NATIONAL AND SUBNATIONAL OPTIONS



The first step in addressing the drivers of DD is to understand where these drivers are occurring within the national and subnational contexts and how they tie into the broader development agenda of the country. Many forest countries are now undertaking strategies to assess the drivers of DD and to develop intervention strategies to address them. Undertaking action to address the drivers of DD, however, can begin immediately. A great deal of experience and literature exists on intervention strategies, and REDD+ practitioners can begin to apply this information while refining their understanding of the drivers within their regional context.

In light of the many uncertainties and complexities of a REDD+ strategy, adaptive governance frameworks will be important in allowing for continuous improvement of intervention strategies as well as embracing a participatory process that involves all relevant sectors and stakeholders (Graham, 2011a).

Options and criteria for addressing the drivers of DD

Options for addressing the drivers of DD can be classified in many different ways and be prioritized following different criteria.

Here are five complementary ways to classify and analyze intervention strategies:

- By the drivers of deforestation they target, namely, intervention strategies that aim to address the direct drivers of DD, and on the other hand, intervention strategies that aim to address the indirect driver;

- By geographical scale, as intervention strategies may be needed at different scales—from local to national and international;
- By the lever they use to achieve REDD+, which could either be an incentive, a disincentive or a change in the enabling conditions;
- By whether they are either supply-side or demand-side;
- By the stakeholder who needs to lead the intervention strategies, be it the public sector, the private sector or a combination of both.

When prioritizing different intervention strategies, a country should consider that:

- The golden rules should be effectiveness and efficiency. One criterion for effectiveness could be the capacity of the government to actually implement the intervention strategy; another could be the degree of political and social complexity and acceptability of the intervention strategy. One criterion for efficiency could be the cost-effectiveness ratio, namely, how much it will cost compared to how much it can achieve.
- While a country is refining its data on drivers of DD and analyzing possible response measures, the simplest priority criterion may be to focus initial efforts on the intervention strategies that can address one or two key drivers in priority regions, as that may be enough to have a large impact.

Intervention strategies according to direct or indirect drivers of DD

Table 3 gives some examples of options for addressing the direct and indirect drivers of DD.

From *Table 1*, the direct drivers of DD act on the ground (e.g. logging [both legal and illegal], fuelwood collection, charcoal production, agricultural expansion, mining, infrastructure and more). Because these drivers are, by definition, at the forest frontier, intervention strategies to address them are often the first tabled when discussing an REDD+ intervention strategy.

Indirect drivers of DD, on the other hand, include broader socioeconomic processes, many of them happening outside the REDD+ area (e.g. migration from other

regions toward the forest frontier, unsustainable national and international demand for rural products, and more). Addressing these drivers of DD may be as important as addressing the direct drivers and may require the implementation of policies and measures far outside the forest sector or even outside the country in question.

On the positive side, there are intervention strategies—such as increasing the market for certified sustainable rural products—that have the potential to address both direct and indirect drivers in the forest frontier and in places far removed from it.

TABLE 3: EXAMPLES OF INTERVENTION STRATEGIES TO ADDRESS THE DIRECT AND INDIRECT DRIVERS OF DD

DRIVERS OF DD	EXAMPLES OF INTERVENTION STRATEGY OPTIONS
Direct, such as <ul style="list-style-type: none"> » Agriculture » Ranching » Logging » Infrastructure » Mining 	<ul style="list-style-type: none"> » Production intensification that reduces the need for forest conversion » Increase sustainable production through certification (e.g. FSC, RSPO, Bonsucro) » Law enforcement » Put forests off-limits (e.g. new protected areas, deforestation moratorium) » Land-use planning to minimize impact of infrastructure development
Indirect, such as <ul style="list-style-type: none"> » National demand for rural products » International demand for rural products » Urban and transport growth 	<ul style="list-style-type: none"> » Improved end-user technologies (e.g. biogas, improved cookstoves) that reduce demand for unsustainable rural products » Ban the import of unsustainable forest products (e.g. Amazon soy moratorium, US Lacey Act and EU FLEGT) » Increase the market for sustainably produced rural products (certification)

TABLE 4: EXAMPLES OF OPTIONS TO ADDRESS LOCAL, NATIONAL/SUBNATIONAL, AND INTERNATIONAL DRIVERS OF DEFORESTATION AND FOREST DEGRADATION

SCALE OF THE DRIVER OF DD	EXAMPLES OF INTERVENTION STRATEGY OPTIONS
Local, such as <ul style="list-style-type: none"> » Agriculture » Ranching » Logging » Infrastructure » Mining 	<ul style="list-style-type: none"> » Direct PES (e.g. payments for watershed protection) » Improved rural producers technologies » Gazette new protected areas
National/Subnational, such as <ul style="list-style-type: none"> » National demand for rural products » Urban and transport growth 	<ul style="list-style-type: none"> » Change demand (e.g. electrification to reduce demand for fuelwood and charcoal) » Increase economic opportunities in traditional rural areas to discourage migration to the forest frontier » Improve enforcement against illegal trade in unsustainable rural products
International, such as <ul style="list-style-type: none"> » International demand for rural products 	<ul style="list-style-type: none"> » Import restrictions (e.g. US Lacey Act, EU FLEGT) » Increase sustainable demand (e.g. international standards on biofuels feedstock for EU, voluntary certification)

Local, national/subnational or international intervention strategies

Another way to look at an intervention strategy is to consider its scale of implementation. Because the drivers of DD can act at multiple scales—from local to international—the intervention strategy would have to do the same. Starting at the smallest scale, **local-level** strategies will act at the project level by changing the behaviour of land users. Typically these strategies will target the direct drivers of DD (e.g. through alternative livelihoods or law enforcement). **National- and subnational-level** intervention strategies are policies and measures that promote sustainable natural resource management. These can be a combination of direct and indirect intervention strategies. For example, policies can be established to direct plantations toward degraded lands or to support the

development of a sustainable fuelwood sector, or governments can develop rural electrification programs that reduce consumption of fuelwood. Finally, international-level intervention strategies act outside the borders of tropical forest countries and would typically address indirect drivers of deforestation (e.g. import restrictions on deforestation commodities or voluntary commitments to procure sustainable produce). Table 4 gives some examples of intervention strategies at local, national and international levels.

TABLE 5: EXAMPLES OF INCENTIVES AND DISINCENTIVES EMBEDDED IN THE INTERVENTION STRATEGY

TYPE OF INCENTIVES	EXAMPLES
Incentives	<ul style="list-style-type: none"> » Financial (e.g. subsidies for sustainable agriculture or forestry, PES schemes) » Non-financial (e.g. access to land tenure in return for sustainable management of forests)
Disincentives	<ul style="list-style-type: none"> » Financial (e.g. fines, taxes and production quotas) » Non-financial (e.g. enforcing existing or new laws that clamp down on deforestation practices)
Enabling conditions	<ul style="list-style-type: none"> » Enlarge and effectively manage protected areas » Minimize infrastructure developments that encourage deforestation

TABLE 6: EXAMPLES OF INTERVENTION STRATEGIES TO ADDRESS THE SUPPLY OR DEMAND OF DRIVERS OF DD

CRITERIA	EXAMPLES OF INTERVENTION STRATEGIES
Supply-side	<ul style="list-style-type: none"> » Commodity certification schemes » Support for sustainable forest management
Demand-side	<ul style="list-style-type: none"> » Fuel switching (e.g. biogas stoves) » Import and trade restrictions (e.g. FLEGT, US Lacey Act) » Increase demand for sustainably produced rural products (e.g. by greening public sector procurement)

TABLE 7: EXAMPLES OF MOSTLY PUBLIC-DRIVEN AND MOSTLY PRIVATE-DRIVEN INTERVENTION STRATEGIES

MOSTLY	EXAMPLE OF INTERVENTION STRATEGIES
Public-sector driven	<ul style="list-style-type: none"> » Integrate REDD+ into national development strategies » Landscape level planning » Improve inter-institutional coordination » Address corruption and limited law enforcement
Private-sector and NGO driven	<ul style="list-style-type: none"> » Sustainable management and certification of forest products » Voluntary carbon markets » Private responsible investment schemes
May be driven by a partnership of public sector, private sector and NGOs	<ul style="list-style-type: none"> » Responsible investment using preferential loans and grants to support REDD+ and other environmentally sustainable rural activities (e.g. FIP private sector tranche) » Bilateral and multilateral programs with participation of businesses and NGO (e.g. OPIC, Global Alliance for Clean Cookstoves)

Incentives, disincentives or enabling conditions (table 5)

A third way in which intervention strategies can be analyzed and prioritized is by considering whether they provide either incentives (carrots) to motivate land users or disincentives (sticks) to those who cause DD. Incentives and disincentives can be provided through a variety of means: financially (e.g. through payments or fines) and non-financially (e.g. through technical support to move producers to more sustainable production practices). Enabling conditions create an environment in which deforestation is less likely to occur (e.g. land-use planning, changes to infrastructure design and new protected areas).

Supply-side or demand-side intervention strategies (table 6)

A fourth way to look at intervention strategies is to consider whether they aim to influence the supply or demand of forest-risk commodities. As shown in Figure 1, demand for land for croplands, pastures, shifting cultivation and wood harvest is responsible for the release of ~1.5 GtCO₂ per year.

Supply-side intervention strategies would aim to improve the sustainability of rural production and natural resource management. These interventions can range from certification schemes for sustainable commodities (e.g. FSC or Roundtable on Sustainable Palm Oil) to moving agriculture out of the forest frontier and into degraded or non-forest lands.

Demand-side interventions, on the other hand, would reduce the demand for unsustainably produced rural goods and services by promoting switching fuel away from firewood

and charcoal to biogas stoves and electricity, by expanding the market for certified sustainable products, by restricting the trade of non-sustainable products, or by promoting lifestyle changes to reduce the rich consumer's ecological footprint. While supply-side interventions will end up being implemented on the ground at local or subnational scales, demand-side interventions can be implemented at the local, national or international levels.

Public or private sector (table 7)

A fifth and final way of considering intervention strategies is to understand whether the intervention strategy requires the **public sector** to lead it or whether it can be led by the **private sector**, non-governmental sectors or a combination of these. The public sector will have a significant role to play in establishing policies, laws and institutions to achieve REDD+. Publicly led intervention strategies include national-level strategies such as tenure reform, positive incentives (see chapter on benefit sharing), and rehabilitation of degraded land (Kissinger et al., 2012), up to international interventions (e.g. import restrictions, as outlined above). Moreover, public-sector interventions can address both the direct and indirect drivers of deforestation.

There are now several examples of purely private-sector interventions that aim to address DD. These include sustainable procurement of certified commodities (e.g. RSPO, RTRS), environmentally responsible investment (i.e. impact investment), and forest carbon markets.

TABLE 8: OVERVIEW OF CREDIBLE THIRD-PARTY STANDARD SCHEMES SUPPORTED BY WWF (ADAPTED FROM WWF, 2012)

COMMODITY	MULTI-STAKEHOLDER INITIATIVE/ STANDARD SETTING SYSTEM	WEBSITE	LAUNCH OF ORGANIZATION	LAUNCH OF STANDARDS	LOGO
Timber	Forest Stewardship Council (FSC)	fsc.org	1994	1994	
Pulp and Paper	Forest Stewardship Council (FSC)	fsc.org	1994	1994	
Soy	Roundtable on Responsible Soy (RTRS)	responsiblesoy.org	2004	2010	
Palm Oil	Roundtable on Sustainable Palm Oil (RSPO)	rspo.org	2003	2008	
Cotton	Better Cotton Initiative (BCI)	bettercotton.org	2005	2007	
Sugar	Bonsucro	bonsucro.com	2004	2010	
Biofuels	Roundtable on Sustainable Biofuels (RSB)	rsb.org	2007	2011	
Livestock	Global Roundtable on Sustainable Beef (GRSB)	sustainablelivestock.org	2012	—	

Finally, many intervention strategies will use a combination of public-private partnership. These can be coordinated efforts within entire sectors or focused on key commodities, such as the Dutch Sustainable Trade Initiative's efforts to promote sustainable approaches to agricultural commodity production or the US government alliance with the Consumer Goods Forum (Kissinger et al., 2012).

Examples of intervention strategies

As outlined in the previous section, there are many intervention strategies for addressing the drivers of DD, and to be successful, national and subnational REDD strategies will need to consider the range of intervention strategies presented in the previous section and select the combination that looks most promising to address the DD in the specific national or subnational context. To help such selection process, this section discusses in more detail several key intervention strategies.

Certification

One of the primary options for addressing forest loss is through the certification of commodities that cause forest loss using metrics of environmental sustainability. According to FAO (2012), by 2011, some 13 per cent of the world's productive forests were certified as sustainably produced, and the figure was 17 per cent for coffee (Agnew et al., 2006). Dominant examples of environmentally friendly certification schemes are listed in Table 8.

Although there is a dearth of detailed studies of how much REDD+ can be achieved through commodities certification in different landscapes and countries (Agnew et al., 2006),

certification schemes are likely to be a part of the institutional and political REDD+ strategy of any tropical country, and we therefore need to work to fill in the gaps of our understanding about the long-term impact of these schemes.

Improved technologies

Improved technologies as part of the country's low emission development strategies could be a key intervention strategy to address DD. Certain activities such as cooking and heating have a large forest footprint in the least developed countries, and the dissemination of alternative technologies will be essential to reducing their emissions. For example, dissemination of fuel-efficient cookstoves and alternative cooking technologies such as biogas have been shown to significantly reduce DD in the least developed countries.

Likewise, more efficient processing and manufacturing of wood products, such as advances in engineering for paper that enable the near limitless reuse of short recycled fibres, or engineered wood products that can be manufactured from fast-growing, under-used and less expensive tree species, can also help reduce the amount of wood taken from forests. Dissemination of these technologies is a promising intervention strategy to address the drivers of deforestation.

Law enforcement

At the national and subnational levels, REDD+ needs to involve a broad set of policies, including direct regulations in the form of enforcement of forest laws, appropriate management of protected areas, and better land-use planning and resource concession policies (Angelsen et al., 2009).

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RECENT LAW ENFORCEMENT ACHIEVEMENTS IN REDUCING DEFORESTATION IN THE LEGAL AMAZON

from (Assunção et al., 2012)

After gradually increasing to over 2.7 million ha / year in 2004, the deforestation rate in Brazil's Legal Amazon decreased almost continuously over the following years to about 0.7 million ha / year in 2009.

What were the intervention strategies that achieved this remarkable outcome? Two alternative explanations have been proposed for this shift. On the one hand, unfavourable market conditions and downward prices for rural commodities may have discouraged deforestation for farmland expansion. On the other hand, conservation policies aimed at controlling and preventing deforestation in Brazilian Amazon underwent significant revisions during the 2000s, marked by two relevant turning points. First, the launch of the Plan for the Prevention and Control of Deforestation in the Legal Amazon (PPCDAm) in 2004 integrated actions across different government institutions and introduced innovative procedures for monitoring, environmental control, and territorial management. Second, and thanks to Brazil's sophisticated forest monitoring system, novel policy

measures were implemented beginning in 2008 that targeted municipalities with critically high rates of deforestation. Together with increased law enforcement, the new measures made bank credit to rural producers conditional upon proof of the borrower's compliance with environmental regulations.

Results of this study indicate that the conservation policies associated with the two turning points were effective at curbing deforestation rates in Brazil. The results suggest that these conservation policies avoided 6.2 million ha of deforestation or around half of the total deforestation that would have occurred from 2005–2009 if policies had not been adopted.

These days, in many developing countries, inadequate enforcement of existing forest regulation is the key driver of DD. For example, it has been estimated that in Indonesia and Brazil illegal logging was responsible for around 75 per cent of deforestation until early in 2000 when stringent law enforcement significantly reduced these figures (Lawson and MacFaul, 2010). See Focus (left) for a brief on recent successes of law enforcement in Brazil's Amazon.

Combating the trade on illegal forest products is also a major intervention strategy, both at national and international scales. Approximately 15–30 per cent of the volume of wood traded globally has been obtained illegally, with some estimates as high as 20–50 per cent when laundering of illegal wood is included (UNEP-Interpol, 2012).

Last but not least, well-managed protected areas can be an important deterrent of deforestation and forest degradation. Over 12 per cent of the planet's land surface is now under protected areas status (World Database of Protected Areas, 2010), and although more studies are needed, research has found that protected areas do reduce deforestation (Clark et al., 2008, Nelson and Chomitz, 2009).

Reducing unsustainable demand

Where feasible, reducing the demand for forest-risk commodities will be a key intervention strategy in addressing DD. Demand-side reductions can come from either the private sector, through moratoria or sustainable procurement, or the public sector, through legislation such as import regulations in importing countries. These initiatives, while reducing the indirect driver of deforestation, will need to be matched with activities on the

ground (e.g. certification of supply) to ensure that demand can be met.

Moratoria

The most well-documented examples of moratoria on forest-risk commodities are the 2006 soy moratorium and the 2009 cattle moratorium, both of which were implemented in the legal Amazon biome (Walker, 2007). By vetoing unsustainable practices, moratoria create a demand for zero deforestation commodities.

Under the soy moratorium, which began with a Greenpeace campaign connecting deforestation with demand for soya in Europe (Greenpeace International, 2006), the Brazilian Vegetable Oil Industry Association—whose members included the majority of Brazilian soy traders—agreed to not purchase soy from newly deforested areas of the Brazilian Amazon. Similarly, the cattle moratorium was an agreement by four meatpacking giants—JBS, Bertin, Marfrig and Minerva—following another Greenpeace report about the impacts of cattle ranching on the Amazon—to only buy beef from ranches that could demonstrate zero deforestation after 5 October 2009 (Walker, 2007).

Sustainable procurement

Many companies are now making voluntary efforts to ensure that their supply chains contain only responsibly sourced products. All companies participating in the Global Forest & Trade Network (gftn.panda.org) publicly issue responsible wood and fibre procurement policies and make a commitment to eliminating any unknown or unwanted sources of wood in their supply chains over time while progressively increasing the amount of Forest Stewardship Council

(FSC)-certified or recycled material in their supply chains. Supplier engagement, traceability and transparency have become essential for companies managing supply chain and brand risks. Companies such as IKEA, Kimberly-Clark and Hewlett-Packard have made their FSC targets public and are communicating their progress toward those goals.

Coalitions of companies are also driving positive change in procurement practices. The Consumer Goods Forum and the 400 companies that it represents have made a commitment to eliminate deforestation in their supply chains by 2020.

International public regulation

Demand-side measures can also be implemented internationally through import restrictions. Few examples exist of government-driven regulation for sustainable commodities, and these are predominantly centred on timber. They include the EU's green public procurement legislation; the US Lacey Act, which makes it a criminal offense to import, handle or sell illegally sourced wood products; the EU Timber Regulation, which requires those placing wood products in the EU to exercise due diligence to ensure that the wood was legally sourced; and recent FLEGT EU legislation that only allows public procurement of timber from sustainable sources (Parker et al., 2012).

Increasing sustainable supply

Global demand for forest-risk commodities is projected to increase significantly over the coming decades. One way to address this indirect driver of deforestation and forest degradation is by increasing the sustainable supply of these commodities. Various intervention strategies will be needed, including shifting production onto degraded lands and intensification in current areas, including expanding production in well-managed natural forests. Certification, as well as law enforcement, will also help to increase sustainable supply and reduce illegal encroachment into forest areas.

Shifting production to degraded lands

Several initiatives are aiming to shift production of forest-risk commodities to degraded lands. Project POTICO by WRI has been seeking to divert up to 0.5 million hectares of oil palm plantations onto degraded land, which could avoid the emission of around 450 MtCO₂. Similarly, creating forest plantations on degraded lands will help replace supplies of timber, paper and pulp that would otherwise lead to deforestation of natural forests. WWF's work in New Generation Plantations (see Focus, right) is an example of this work in action.

Intensification of production

Increasing the productivity of agriculture on existing farmland (intensification) can help meet the global demand for forest-risk commodities without causing deforestation on additional lands (extensification). Still, research has shown that intensification of production to reduce deforestation, known as the Borlaug hypothesis, needs to be coupled with land use conservation policies to reduce renewed conversion of tropical

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VERACEL CELLULOSE: FOREST RESTORATION, CARBON STORAGE AND INCOME GENERATION: MONTE PASCOAL—PAU BRAZIL ECOLOGICAL CORRIDOR

WWF's Living Forests Report model predicts that 4–6 million hectares of new plantations will be needed every year between now and 2050 to meet the growing demand for timber, fibre and biomass for energy. However, we recognize that in some areas, without significant changes in policies and practices, expanding intensively managed plantations will cause controversy—for instance, by threatening the rights or livelihoods of forest-dependent peoples or valuable ecosystems and biodiversity.

In 2007, WWF set up the New Generation Plantations project, in partnership with private forestry companies and government agencies. New Generation Plantations are forest plantations that:

- Maintain ecosystem integrity;
- Protect and enhance high conservation values;
- Are developed through effective stakeholder involvement processes;
- Contribute to economic growth and employment.

The goal of the New Generation Plantations project is to identify, promote and communicate better practices for plantation design and management.

The Monte Pascoal–Pau Brazil Ecological Corridor project aims to restore Atlantic rainforest on suitable areas belonging to local landowners, especially cattle ranchers. The project goal is to connect isolated fragments of the Atlantic Rainforest and form a native forest corridor between two national parks, Monte Pascoal and Pau Brazil.

The project supports social development in the region by providing concrete jobs and income opportunities for the local community. A local cooperative, Coopantar (Cooperative of Reforestation Workers of Far Southern Bahia), carries out the practical planting and restoration work. There are several ongoing ecological corridor projects in Brazil. Success depends strongly on how they are financed. All ecological corridor projects are carried out within the broader governmental effort to find resources to connect rainforest fragments in coastal Brazil.

More information on New Generation Plantations at bit.ly/15FV1Kx

More information on the Monte Pascoal-Pau project at bit.ly/166jPv5

forests, now motivated by the increased profitability of intensified agriculture, the so-called Jevons paradox (*Gutierrez-Velez et al., 2012, Barreto et al., 2012*).

Expanding production in well-managed natural forests can also help to sustainably meet rising global demand for forest products. Well-managed forests can play an increasingly important role in deterring destructive and illegal logging and outright deforestation. Research shows that managed forests may be as effective, or more effective, in reducing deforestation in comparison to protected areas. Well-managed forests provide carbon benefits together with streams of social, economic and environmental benefits while being more resistant to fire and more resilient to climate change than conventionally logged forests. The WWF Living Forests Report models show that another 200–300 million hectares of forest would need to be managed responsibly for commercial harvesting by 2050 to meet increased demand for food, fuel and fibre (WWF, 2012b).

WWF VIEWPOINT



In February 2012, WWF supported the CAN International submission to the UNFCCC on drivers of deforestation.⁴ This submission recommended the following steps:

For REDD+ countries:

- Address drivers of forest area and carbon loss in multi-sectoral low emissions development strategies and in national low carbon development plans.

- Encourage parties to UNFCCC to reform ineffective legal and governance frameworks, monitor drivers and clarify land-use rights and responsibilities.
- Request that NAMAs integrate climate mitigation goals with land-use policies across different sectors, including agriculture, mining, public infrastructure, urban development and forestry.
- Encourage parties to UNFCCC to identify and utilize existing abandoned and degraded land for production.

For all countries:

- Note the importance of and invite parties to UNFCCC to assess policy instruments to reduce the footprint of national and international markets and trade through enforcement of laws and governance, by developing and implementing sustainable and responsible procurement, and by promoting credible certification.
- Invite parties to UNFCCC to adopt policies to encourage the private sector to take actions that reduce its contribution, whether direct or indirect, at home or abroad, to deforestation and forest degradation.
- Invite parties to UNFCCC to address leakage prevention through international coordination and active participation by developed countries and major emerging economies that play a key role in the demand for commodities such as palm oil, beef and soy.
- Encourage all parties to UNFCCC to implement policies and develop incentives to reduce wasteful consumption.

- Encourage all parties to UNFCCC to remove perverse incentives that drive deforestation and degradation and ensure responsible finance, including consideration of taxes, subsidies and investment.

In November 2010, in advance of COP 16, WWF also produced a position paper on the international drivers of deforestation. This position paper made three key points:

- Uniform policies are needed across markets to promote, track and label legal and sustainable products.
- International policies need to account for direct and indirect drivers of deforestation, including land-use change, and robust sustainability safeguards need to be implemented in order to avoid counterproductive policies.

- Countries should take steps to put a price on carbon emissions to internalize the cost of damages and incentivize better forest management practices.

Finally, around the issue of certification, WWF participates actively in many of the roundtables and certification schemes governing sustainable production of forest-risk commodities (e.g. FSC, RSPO, RTRS and Bonsucro). See Annex 1 for a list of key experts and contacts in these roundtables and the further resources section below for links to WWF initiatives acting in these areas.



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FURTHER RESOURCES



- WWF Global Forests and Trade Network: bit.ly/13thhna
- WWF Market Transformation Initiative: bit.ly/15FWDEa

- New Generation Plantations: bit.ly/15FV1Kx
- Biogas stoves (Gold standard): bit.ly/10u0ATz
- Global Alliance for Clean Cookstoves: www.cleancookstoves.org
- Illegal logging and FLEGT: loggingoff.info

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ENDNOTES



1. Decision 1/CP.16 para. 68
2. Decision 1/CP.16 para. 72
3. For an example, see bit.ly/10u49ZG
4. bit.ly/166sIEQ