BUILDING NATURAL CAPITAL:

How REDD+ can support
a Green Economy

Summary for
Policy Makers

Acknowledgements

Disclaimer

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How REDD+ can support a Green Economy

Produced by the International Resource Panel.

This summary report highlights key findings from the report of the International Resource Panel: *Building Natural Capital: How REDD+ Can Support a Green Economy*. It should be read in conjunction with the full report.

Sources and references for the text and figures in this summary are available in the full report 'UNEP (2014) Building Natural Capital: How REDD+ can Support a Green Economy'. The report can be downloaded at www.unep.org/resourcepanel

Preface from the International Resource Panel Co-Chairs

Climate change is an increasingly critical issue, calling for a concerted response by all citizens. Despite the severity of the issue, the necessary collaborative efforts seem scarce on the ground. One welcome exception is REDD+, an effort led by the United Nations Framework Convention on Climate Change to reduce greenhouse gas emissions from deforestation and forest degradation in developing countries, along with conservation, sustainable management of forests and enhancement of forest carbon stocks.

If systematically pursued, REDD+ could address both climate change and the preservation of the world's tropical forests, while also protecting biodiversity and improving hydrological cycles and soil stability. But it is just getting started, with most of the countries that are collaborating in the effort still developing the capacities and policies to put REDD+ into practice on the ground.

On 19-20 June 2013, the UN-REDD Programme convened a Global Symposium on REDD+ in a Green Economy, which explored the ways that REDD+ could be linked to an accelerated effort, initiated at the 2012 Rio+20 United Nations Conference on Sustainable Development to nudge the world's governments and the private sector toward a Green Economy. Concerned governments and progressive businesses are taking some initial steps in this direction, and making major investments to put their economies and operations on a more sustainable basis.

Building on the findings of the Symposium, UNEP's International Resource Panel convened an international Working Group on REDD+ in a Green Economy, composed of experts from a wide range of relevant technical fields, including economists, social scientists, foresters, and spatial planning experts. Over the past six months, the Working Group has synthesized the views of some of the great diversity of stakeholders with an interest in REDD+ and a Green Economy, or in either of these two seemingly disparate initiatives, leading to this report. The vision was that REDD+ could be a catalyst for building broader support for a Green Economy, and that the global interest in a Green Economy could support REDD+ and contribute to its implementation.

Key findings show that REDD+ can help correct the market, policy, and institutional failures that undervalue the more serious climate change mitigation services provided by forest

ecosystems, as well as secondary services. If designed well, REDD+ can thereby contribute to the key elements of a Green Economy: low carbon development, social inclusiveness, increased human well-being, and respect for natural capital. It can thus directly serve the interests of the millions of people in developing countries who directly depend on the forests for survival. We anticipate that this report will stimulate further thinking about REDD+ in the larger context of sustainable development, to which it can deliver an essential contribution.

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Co-Chairs, International Resource Panel

January 2014

Foreword

Forests and the services they provide are vital to sustainable development and human well-being, whether in terms of storing carbon, supporting the world's richest reservoir of terrestrial biodiversity, regulating water flows, reducing soil erosion, or providing a source of nutrition, timber and valuable genetic resources. The ecosystem services provided by tropical forests are estimated to be worth an average of US$ 6,120 per hectare per year.

Despite this clear macro-economic case, the total yearly forest loss averages 13 million hectares per year— equivalent to the surface of a football field being destroyed every three seconds. The scale of forest loss and degradation is indicative of the failure of institutions to sufficiently take into account natural capital considerations when planning and implementing national economic and developmental policies and projects.

UNEP is working to address this issue through global initiatives, such as: The Economics of Ecosystems and Biodiversity, the Intergovernmental Panel on Biodiversity and Ecosystem Services, and the Natural Capital Declaration. And across the United Nations System, progress in addressing tropical deforestation is being made through efforts such as the Global Compact, and the UN-REDD Programme, a collaborative initiative between UNEP, and UN Development Programme, and the Food and Agriculture Organization.

The report examines some of the underlying causes of deforestation and forest degradation. It describes possible solutions in the context of a wider transition to an inclusive Green

Foreword

Economy, which is vital to achieving the emerging post-2015 sustainable development agenda. The report is published at a time when the United Nations approach for Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (REDD+) under the UN Framework Convention on Climate Change is coming into its own. At the 19th Conference of the Parties in Warsaw, member states adopted the 'rulebook' for REDD+ implementation.

Pledges from donor countries such as the US, Norway and the UK mean the initiative is now backed by US$ 6.27 billion. This clear policy signal brings additional momentum to REDD+ and opens new opportunities to attract private-sector investment to conserve the world's forests.

REDD+ is a bold pilot project that offers an opportunity for countries to pursue a more sustainable development pathway through the conservation, restoration and sustainable management of forests. REDD+ is an important catalyst for achieving an inclusive Green Economy. The true value of forests comes to life when national and local decision-making processes are directed towards natural capital investment, supporting livelihoods and achieving sustainable economic growth.

At the same time, there is a need to create the enabling conditions required for REDD+ to succeed; from good governance and sustainable financial mechanisms to the equitable distribution of benefits. These enabling conditions are themselves the building blocks for an inclusive Green Economy.

The report seeks to improve knowledge about how REDD+ initiatives and a Green Economy transition can better inform each other and contribute towards poverty alleviation and sustainable development. It is the first in a series of products from UNEP that aim to help countries achieve high socio-economic returns for their investment in REDD+ and green economic development.

Achim Steiner
United Nations Under-Secretary-General and
United Nations Environment Programme, Executive Director

1. Sustainable Development and Forests in a Changing Climate

Red-eyed tree frog (*Agalychnis callidryas*), Costa Rica. Amphibians are extremely sensitive to environmental hazards such as the clearing of forest and climate change.

Daniel N. Proud

Sustainable Development
and Forests in a Changing Climate

Agricultural expansion behind population growth and increased human well-being has come at the expense of forests. With a human population exceeding seven billion and growing towards nine billion, the demand on natural resources is rapidly increasing.

The 2005 Millennium Ecosystem Assessment found that over 60 per cent of ecosystem services examined were in the process of being degraded or used unsustainably. The 2012 Global Environment Outlook confirmed worrying trends for a number of ecosystem services. These include water withdrawal and pollution of wetlands; a vicious combination of water scarcity, overgrazing, and overexploitation of trees in the most arid parts of the world; and tropical forests being overharvested and cleared for agriculture, threatening both the global climate and local communities and leading to an irreversible loss of biodiversity, degradation of soils, and disruption of water flows. Some of these trends contribute to climate change, while others are exacerbated by it, or reduce the capacity of ecosystems to adapt to climate change.

While deforestation and forest degradation release approximately 17 per cent of global greenhouse gas emissions, forest vegetation and soils remain major repositories of carbon. Tropical and subtropical forests together contain over half the total amount of carbon contained in the atmosphere. Nevertheless, globally, forests are not being managed sustainably, with a total forest loss averaging about 13 million hectares per year between 2000 and 2010. According to the Millennium Ecosystem Assessment, forests have effectively disappeared from 25 countries and more than 90 per cent of forest cover has been lost in a further 29 countries. This continued clearing of forests represents a major anthropogenic source of carbon dioxide to the atmosphere, second only to fossil fuel combustion.

Negative carbon feedbacks as a result of anthropogenic climate change, such as forests dying and releasing even more CO_2, would be one of the most obvious 'tipping points' humanity needs to anticipate and prevent. Large parts of the Amazon forest, for example, could change into an open savannah woodland, with a much lower

carbon storage and decreased biodiversity, if deforestation surpasses 20 per cent of its overall area and the climate warms beyond 2°C.

The evolution of REDD+

Recognizing their critical role in regulating the climate, forests have received considerable attention from the international community, notably under the United Nations Framework Convention on Climate Change (UNFCCC). In 2005, this gave rise to an initiative called 'Reducing Emissions from Deforestation and forest Degradation in developing countries', or REDD, based on a proposal by the Coalition of Rainforest Nations. In 2010 the initiative was expanded to include the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks. This expanded approach is known as REDD+. Early indications are that it can provide a catalytic source of finance for transforming forest management towards a green economy paradigm. To date, over US $6.27 billion has been allocated by the global community in public financing for REDD+ activities.

REDD+ investments and revenues not only provide a mechanism to account and pay for the climate mitigation ecosystem services of forests, but also provide financial support to sustainable forestry and sustainable landscape management. This provides multiple benefits to society beyond climate mitigation, including poverty alleviation, biodiversity benefits, and ecosystem resilience.

Many countries already have reasonably comprehensive forest legislation, regulations, and policies to guide efficient use of forest ecosystems, but problems have often arisen in implementing these. REDD+ can provide new political will and funding to enhance the implementation of these policies. It is designed primarily to support developing countries where forests are at risk, but all countries could benefit from some of the approaches of REDD+ - such as promoting low carbon production by the private sector, reducing land/agricultural emissions and improving resource efficiency.

REDD+ is still in its early stages of implementation, and many of the 49 partner countries of the UN-REDD Programme are at the initial stage of development known as "REDD+ Readiness." It is intended that this stage will be followed by "REDD+ Implementation" and then "Performance-based Payments". A global REDD+ mechanism is the expected final design of the process to be approved by the UNFCCC Parties, and that is hoped to promote the

REDD+ can provide a catalytic source of finance for transforming forest management towards a green economy paradigm.

Sustainable Development and Forests in a Changing Climate

changes in investment that will be required to build a significant green dimension into the global economy.

REDD+ is already having an important effect as it brings greater world attention to the conservation of tropical forests, monitoring the state of forests, and the contributions of people living in and around forests. As it becomes more widely implemented, it has the potential to:

- Maintain and enhance the numerous benefits of standing forests, and draw attention to the full socio-economic costs and wider environmental impacts of their degradation or destruction;

- Encourage governments to clarify land tenure and improve forest and land-use governance;

- Generate new funding for sustainable forest management;

- Demonstrate that sustainably managed forests are part of overall landscape management that involves multiple government sectors and stakeholders, representing public and private interests and integrated solutions;

- Help leverage other investments, especially from the private sector;

- Create inclusive, informed and participatory decision-making where trade-offs or links between development and conservation objectives are better understood.

Figure 1 Some potentially mutually beneficial relationships between REDD+ and a Green Economy

Increased investments

- Build and secure natural capital
- Improve resource efficiency
- Share benefits equitably

REDD+   GREEN ECONOMY

- Clarify land tenure and improve governance
- Change fiscal incentive framework
- Assure permanence of forest (carbon) stocks and avoid leakage

Enabling conditions for REDD+ investments
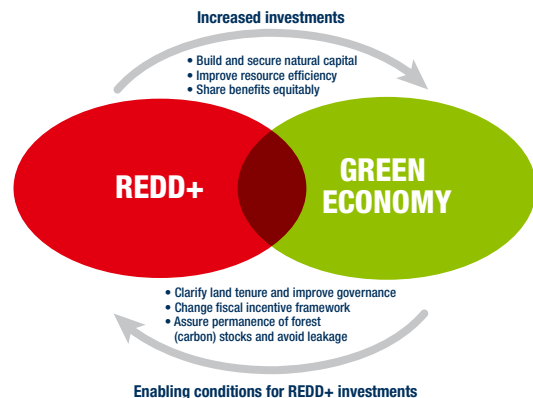
2. Green Economy in Practice

Rosita, a three year old girl, showing a seedling to be planted, Sumatra, Indonesia.
Ricky Martin / CIFOR

Green Economy
in Practice

UNEP defines a Green Economy as one that *'results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. In its simplest expression, a green economy can be thought of as one which is low carbon, resource efficient and socially inclusive'.* Green Economy is an evolving concept that goes beyond a low-carbon development path by considering social and environmental dimensions and natural resources more broadly as sources of wealth, job creation and prosperity.

A Green Economy supports sustainable development through its policy focus on increasing or shifting public finance and private sector capital towards the emerging 'green' sectors and the 'greening' of 'brown' sectors. The intent of a shift in investment is to transform national economies (and ultimately the global economy) so that growth is generated by green economic activities and, perhaps more importantly, seeking ways to ensure that the benefits of growth are equitably shared.

A Green Economy requires that human development is decoupled from the unsustainable consumption of natural resources and aligned with the long-term functioning of ecosystems.

The kind of measures which need to be broadly adopted include **cross-sectoral planning and resource management, innovations in resource extraction, use and recycling systems,** more **efficient use of renewable resources**, and market signals that **give appropriate values to ecosystem services**.

A mix of policy instruments can promote green innovation and investments, including **institutional reforms** (e.g. land tenure), **regulations** (e.g. norms and standards, including safeguards), **information polices** (e.g. eco-certification, public disclosure, public marketing and branding, education campaigns), **risk mitigation** (e.g. guarantees), **fully integrating environment and climate** in economic planning policies (through Strategic Environmental Assessments, for example), and **pricing, fiscal and trade policies** that get the incentives right (tradable permits, taxes and subsidy reform).

REDD+ and a Green Economy

Activities supported by REDD+ can be designed to: increase income from enhanced output on cultivated land, develop new "Green" industries, promote forest-based ecotourism, and sustainable production of key commodities for which demand is rising.

Green Economy
in Practice

These complementary revenue streams both increase the value of standing forests (including via REDD+ payments) and help address the drivers of deforestation (by encouraging intensified output on land already under cultivation). The diversified sources of income generated by such projects is reassuring to potential investors.

REDD+ can also support the transition to a Green Economy by demonstrating the value of natural capital in the global economy. This would help change the pattern of investment and incorporate natural capital in economic policies rather than treating the environment as an externality.

REDD+ is still at a preliminary stage, but early indications are that it can provide a catalytic source of finance for transforming forest management towards a green economy paradigm. To date, over US\$ 6.27 billion has been allocated by the global community in public financing for REDD+ activities, and projections for the 'Payments Phase' of reduced emissions are in the range of US \$30 billion per year from 2020 onwards.

However, REDD+ is likely to be successful only if it is supported by an enabling environment that includes Green Economy elements such as good governance, law enforcement, land tenure reform, sustainable supporting

Figure 2 A comparison of the role of forests in the business-as-usual-economy and the Green Economy
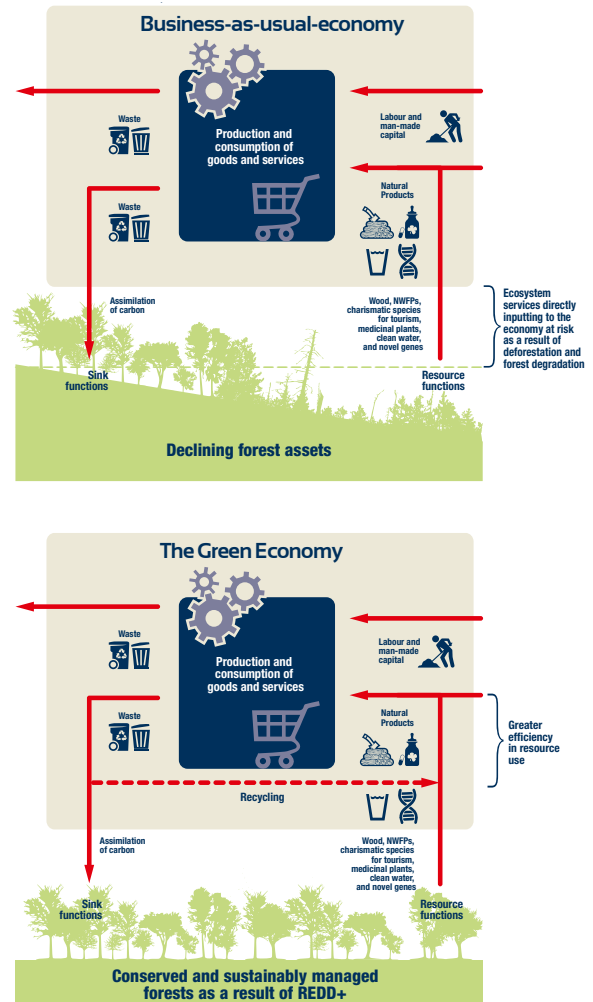
SOURCE: UNEP-WCMC adapted from OECD (2011)

Deforestation and forest degradation are ultimately driven by consumption patterns and processes in virtually every sector of the economy.

Green Economy innovations resulting from REDD+ have the potential to increase the resource efficiency of many of these sectors.

financial mechanisms, equitable distribution of benefits, and valuations and recognition of natural capital.

Integrating REDD+ into a larger Green Economy framework and thus into all relevant economic planning processes is essential because (a) deforestation and forest degradation are ultimately driven by consumption patterns and processes in virtually every sector of the economy, and (b) Green Economy innovations resulting from REDD+ have the potential to increase the resource efficiency of many of these sectors.

Implementing REDD+ will require a mix of policy instruments. The choice of these needs to be informed by sound planning and active support from many interest groups, including the private sector. Policy instruments promoted under a Green Economy which could be used include:

- **Fiscal instruments and incentives** (such as public payments like those being provided by REDD+, markets for carbon sequestration and other ecosystem services, and others), supplemented by **reducing economic incentives that drive deforestation**;

- **Information policies** that help ensure that both decision-makers and the general public are aware of the multiple values of forests, enhanced through measures such as certification schemes;

- **Regulations** that may include new laws, stronger law enforcement, new approaches to tenure in forests, and binding safeguards;

- **Increased options for funding** beyond REDD+ to include private payments for other ecosystem services, tax concessions, voluntary offsets, resources to support financial risk mitigation strategies such as Advance Market Commitments, and others;

- **Continuing research** to quantify costs of inaction, increase understanding of the values of multiple forest benefits, support development of innovative strategies to conservation, and increase the benefits forest ecosystems provide.

- Increased investments in and continued political support of REDD+ is essential to create productive, profitable, and sustainable landscapes that sequester and store more carbon and will enable enhanced delivery of ecosystem services **– the heart of a Green Economy**.

3. Economic Opportunities of REDD+

Non-timber forest products (NTFP) on sale at the village market in Sabo Ouagadougou, Burkina Faso.
Ollivier Girard / CIFOR

Economic Opportunities
of REDD+

The multiple ecosystem services that REDD+ delivers to a Green Economy

REDD+ contributes to climate change mitigation and low-carbon development, and some countries are already facilitating REDD+ pilot projects which are issuing carbon certificates that are being traded on the voluntary carbon market. For example, the Kasigau Corridor REDD+ project in Kenya issued the first REDD+ offsets in 2009 (Verified Carbon Standards, VCS) on behalf of 4,800 landowners and communities, with the main buyers coming from the private sector, including Microsoft, BNP Paribas and La Poste. The US $2 million annual income is being spent on community development, such as water projects.

However, the benefits of REDD+ implementation go far beyond carbon sequestration. Forests and other ecosystems make valuable contributions to sustaining water-related ecosystem services, including filtering and purifying water; stabilizing soil and reducing erosion, which in turn reduce sedimentation of watercourses; and regulating the amount of water reaching watercourses, thus reducing the risk of flooding. These benefits are essential not only for people living in the forest but also downstream, even in distant cities which depend on the clean flow of water. 33 of the world's 105 largest cities (such as Rio de Janeiro, New Delhi, Nairobi, and Jakarta) obtain a significant amount of their water from protected areas and forest watersheds that could be potential sites for REDD+ investments.

Sustainably managed forests could provide wood and fibre on an ongoing and renewable basis for biomass-based energy, because bioenergy from sustainably

Figure 3 How REDD+ will build numerous enabling factors for a Green Economy
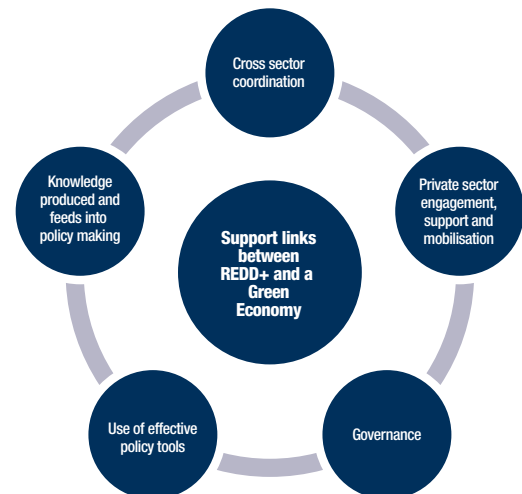
Economic Opportunities
of REDD+

Table 1 How REDD+ and Sustainable Forest Management (SFM) can support the transition to a Green Economy (Low, medium and high refer to the potential level of support that REDD+ could provide)

MAJOR TRAITS OF A GE TRANSITION	REDD+/SFM IN DEVELOPING COUNTRIES WITH AT RISK FORESTS	SFM AND SUSTAINABLE CONSUMPTION IN RICH COUNTRIES, AND EMERGING ECONOMIES
Transition to sustainable renewable energy	**Medium to high:** particularly in countries where currently unsustainable firewood collection is a major cause of forest degradation **Examples:** energy access through renewables, improved cook-stoves, firewood plantations	**Medium:** Carbon impacts can be included in life-cycle analysis of renewable energy policies & procurement agreements **Examples:** Sustainable production of wood for energy, and biofuels
Transition to low carbon production	**Medium to high:** particularly in countries where unsustainable agriculture is a major cause of deforestation **Example:** agroforestry, sustainable agricultural practices, developing green industries in rural areas to add value	**Low to medium:** if countries with large agricultural sectors take up LULUCF mitigation **Examples:** agroforestry, sustainable agricultural practices
Increase resource efficiency, particularly reducing unsustainable demands on the environment	**Medium to high:** particularly in countries where unsustainable agriculture is a major cause of deforestation **Example:** agriculture intensification and use of degrade land would reduce pressure on forests	**High:** Reducing the ecological footprint of unsustainable demand from rich countries and large emerging economies is a key component of a successful REDD+ and of a Green Economy transition (green procurement) **Examples:** Change in consumption patterns away from meat, buy certified products, green procurement, ban import of illegal forest products
Acknowledge and reward the provision of ecosystem services	**Medium to high:** important to compensate rural populations for the legitimate opportunity costs of REDD+ and to enhance the provision of non-REDD+ Ecosystem Services **Example:** Payment for Ecosystem Services schemes	**Low to medium:** important to compensate rural populations for the opportunity costs of forest conservation and to enhance the provision of ecosystem services **Examples:** Payment for Ecosystem Services, buying of offsets, nature in agricultural landscape, maintenance of historical landscapes
Improve human wellbeing through economic growth but also through more equitable distribution of opportunities and rewards	**Low to Medium:** If done right REDD+ can become an important source of income for poor rural communities (still a minority of the poor population of developing countries). **Examples:** community based REDD+ programs, Payment for Ecosystem Services for indigenous and local communities	**None to low:** Even so, it should be noted that reducing impacts of the transition for relative poor in mature economies and securing their access to natural resources are becoming important social issues

Forests provide food as well as sources of income from non-timber products and tourism. They also help adapt to climate change.

produced biomass can result in lower life cycle greenhouse gas emissions than those emitted by fossil fuels. In addition, sustainably managed forests also provide building and construction materials, pulp, paper and packaging board, newsprint and tissue products, all of which are also reusable and recyclable. New and innovative uses of fibre are quickly emerging, including in the fields of electronics, food, pharmaceuticals, chemicals, biofuels and bioplastics, with sustainable forest management as a key strategy to increase fibre production.

Forests support the world's richest reservoir of terrestrial biodiversity and provide habitats for many unique types of plants and animals, many of which are now endangered. Forests often nurture plants that contain genes that can be valuable as source materials in the development of new crops or pharmaceutical products. Forest species also provide essential services, such as seed dispersal and pollination that can be worth billions of dollars annually to farmers.

For rural communities selective and sustainable harvesting of trees can provide important material for construction or charcoal production/firewood (over two billion people use woodfuel for cooking, and wood provides over 80 per cent of energy needs for some communities, although it should be noted that currently much of the production of charcoal and woodfuel is unsustainable). They also provide non-timber products, such as medicinal plants, edible fungi, fruits, nuts, seeds, oils, fibres (which can be woven into baskets, yarn or fabric), ornamentals (such as orchids) and resins. The income from these products can often help boost local livelihoods and is estimated that non-timber forest products can generate some four million person-years of employment annually, along with US $14 billion in international trade and far more in local subsistence benefits. Such figures indicate that sustainably harvested non-timber forest products can provide more sustainable economic benefits than forests used for logging only, with a greater share of the benefits going to the rural poor.

Forests provide substantial food, in the form of fruits, nuts, honey, leaves, mushrooms, insects, and bushmeat. For example, tree foods provide some 30 per cent of rural diets in Burkina Faso, and many rural people in tropical countries depend on trees for livestock fodder. In West Africa, over 4 million women earn about 80 per cent of their income from the collection, processing, and marketing of oil-rich nuts collected from shea trees that occur naturally in the forests.

Economic Opportunities
of REDD+

Destroying and depleting tropical forests may result in humanity losing highly useful medicines yet to be discovered. Fewer than 1% of known plants have been fully analysed for their potential pharmacologic composition. **Tetra Images / Getty Images**

In addition, forest protected areas are visited annually by millions of people, most coming from within the country. Tourism can have a positive effect on the incomes of the poorest households. The ecotourism market has grown three times faster than the global tourism industry as a whole, earning about US $60 billion in 2009, and countries with biodiversity-rich forests protected by REDD+ activities could use this consumer demand to earn additional income. The landscape infograph at the end of this publication provides an overview of potential benefits of forests and REDD+ across a landscape.

REDD+ increases resilience to environmental changes

Sustainably managed forests can also help ecosystems adapt to climate change. This is especially true if the forests contain diversity in species and landscapes (thereby giving them the greatest range of options for adapting to change), are as large as possible so that they cover multiple climatic zones, and are linked with other forests and other types of ecosystems through landscape management (thereby allowing gene flow that can help promote adaptation to change). The resilience of forests can help avoid reaching planetary boundaries, also called "tipping points" – critical transitions that will lead to new ecosystems from which no return is likely.

Naturally occurring forests tend to be more resilient than planted forests. Forests in good condition with many native species - both animals and plants - can better adapt to extreme natural events and so will be more likely to continue to provide a range

Economic Opportunities
of REDD+

of functions than overexploited forests or plantations, which are often more vulnerable to extreme weather conditions or pest outbreaks. Thus mature forests can also help adapt to climate change impacts, when weather extremes are expected to become more common and the distribution of pests, diseases and harmful non-native species will be altered.

Ecosystem-based adaptation to climate change is a high priority in many developing countries where the impacts are already being felt. REDD+ activities can be integrated within existing adaptation strategies, supporting countries to invest in early climate change adaptation through addressing the degradation of resources and securing the services and resilience provided by forests. This will put them in a stronger position to reduce the risks associated with climate impacts.

The multiple benefits of REDD+ in the landscape

When governments are seeking pilot or priority areas for REDD+ activities, it is essential to consider the full range of benefits beyond carbon storage and sequestration. The model presented illustrates two options for a REDD+ implementation project of equivalent size and biomass, showing that forest 1 is the preferable choice because of the watershed benefits in addition to those of carbon sequestration and storage.

Considering ecosystem services at a landscape scale can help identify longer-term and far-reaching sustainability opportunities, highlighting tradeoffs that may not be apparent when considering shorter-term and more local scales. REDD+ can help strengthen a sustainable landscape approach through integrated land use planning that accounts for the trade-offs between alternative land-use objectives, such as carbon sequestration and storage, natural habitat protection, and timber, food and bioenergy production.

The focus of a REDD+ activity may cover only part of such a landscape, however, the effects of the activity will have implications far more widely. Its contributions to climate mitigation may take effect globally, while many of the "non-carbon" benefits, such as sustainable management of forests, support for pollinators, watershed protection, and conservation of biodiversity, will be felt locally or regionally throughout the landscape.

Of course, a landscape approach is not sufficient when many of the drivers of resource degradation are international. Therefore, landscape approaches at

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Figure 4 The climate change mitigation benefit of options 1 and 2 for forest retention is similar, but the water quality and sediment control benefit of option 1 is much higher

Forested area above the red line is not under threat of deforestation in reference scenario.

Forested area below the red line is expected to be cleared in reference scenario. Country calculates that half can be retained with REDD+.
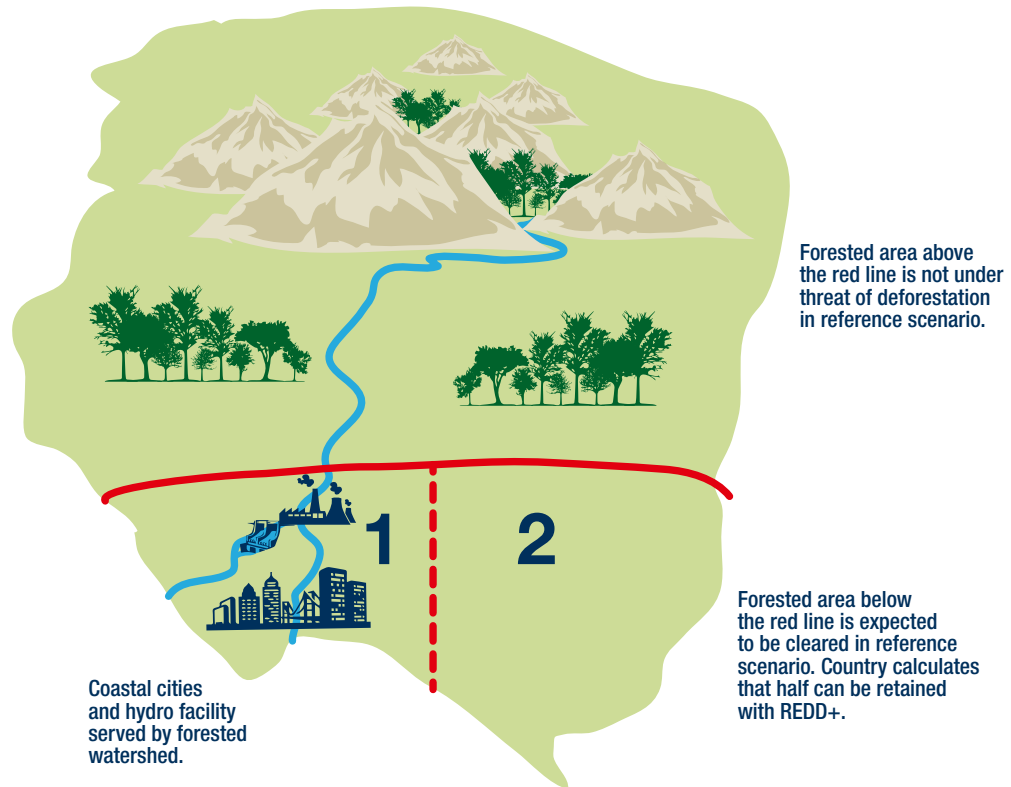
Coastal cities and hydro facility served by forested watershed.

the national level need to be supported by international measures in support of sustainable management of natural resources.

The ecosystem services provided by forests are worth significant sums of money and are essential for continued human well-being

The value of tropical forests has been estimated by The Economics of Ecosystems and Biodiversity study at an average of US $6,120 per hectare per year if environmental services are appropriately valued.

One of the implications of the idea of ecosystem services has been the concept of payment for these services (Payments for Ecosystem Services (PES)), which is now a working policy instrument in numerous countries. PES works by creating a market or price for a well-defined ecosystem good or service (or a land use supporting that service), matching providers and buyers that can enter into a voluntary contract. In some cases, the full package of ecosystem services is seen as a public good, deserving of public investment; China, for example, is investing billions of dollars in a variety of PES initiatives. REDD+ could well become the world's largest PES scheme once it is fully implemented, enabling counties to receive financial support for maintaining their forests and the ecosystem services that they provide.

Economic challenges and opportunities of REDD+

The contribution to climate change mitigation from REDD+ activities can be estimated by the potential emission reductions (although estimates of these avoided costs of climate change remain debatable). Many countries or localities have put a carbon pricing scheme into place (often called a "carbon tax"), and emissions trading schemes have established prices for carbon/greenhouse gas emissions. However, the resulting prices have been highly volatile, not to mention controversial. Therefore, the market price/ valuation of carbon is a serious issue for any initiative, such as REDD+, that is linked to the price of carbon (although non-market based approaches are currently also being explored under the UNFCCC); when the price drops too low, the incentives for sustainable forest management may weaken, perhaps significantly. Without greater certainty over the market price, other land use options provide lower risks. Stopping deforestation may require that the price of carbon will

REDD+ could well become the world's largest PES scheme once it is fully implemented, enabling counties to receive financial support for maintaining their forests and the ecosystem services that they provide.

Economic Opportunities
of REDD+

need to be higher than the current voluntary market credit price, and that other values beyond carbon will also need to be included in the calculation of the total value of forests, and influence decision making. The focus solely on carbon credits sells forests short.

Drawing from the experience of many commodity markets, a danger that needs to be addressed is that intermediaries rather than producers may gain control of the REDD+ market, leaving governments and local forest owners to gain only a modest portion of the capital flows. This mechanism design issue needs to overcome potential inefficiencies and inequities that already characterize land-use in many low-income countries, so that the positions of forest rights-holders (especially among the poor) are protected. For example, REDD+ activities could distinguish between small holders and large corporations, with very different social implications.

The economist Nicolas Stern estimated that the opportunity costs of forest protection, meaning the foregone income from an alternative land use, in eight countries representing 46 per cent of global deforestation would be about US $5 billion per year. In 2008 these figures were revised upward to US $7 billion per year as a result of higher commodity prices (though some of these costs have again declined). These opportunity costs of land reflect the economic incentives promoting deforestation that need to be overcome to keep forests standing, and some have suggested that payments for REDD+ should be tied to such opportunity costs of land. The estimate of the opportunity costs of land, however, often fail to consider the costs of the loss or decline of forest-based ecosystem services as a result of deforestation, which are estimated in the tens of billions of dollars annually.

The costs of up-front capacity building and implementing REDD+ measures can be substantial. One report estimated that capacity building for REDD+ would cost US $4 billion over five years in 40 forest nations, and for 25 countries, the transaction costs to administer REDD+ payments could be US $233-500 million per year, with monitoring costs of US $7-17 million annually. But as REDD+ becomes better established, experience from implementing projects could well result in best practices being defined and adopted, leading to reduced transaction costs

The implementation of REDD+ could create new economic opportunities for local communities and indigenous peoples, and this should be a major objective as REDD+

matures. For example, national REDD+ strategies could include measures to create alternative sources of income, such as the marketing or further processing of sustainably harvested timber and non-timber forest products.

An estimated 13.7 million people were employed in the formal forest sector globally in 2010 (with at least 40 million more in the informal forest sector). Concerns over poorly maintained forest stocks threaten the sustainability of this industry, for example, calculations in Ghana predict a 68 per cent drop in gross value of production between 2012 and 2020 if governance and management are not improved. Therefore, REDD+ activities supporting good governance, law enforcement, and improved forest management could help sustain an economically important sector and provide viable alternatives for those whose employment is at stake. In considering potential benefits of REDD+ for income, the contribution of the informal forest sector is vital. It is estimated that formal employment comprises only between a third and half of forest sector jobs.

Designing a REDD+ mechanism requires identifying the right mix of policy instruments, governance principles, and incentives aimed at changing production, consumption and investment decisions.

Enabling REDD+ to support a Green Economy

Designing a REDD+ mechanism requires identifying the right mix of policy instruments, governance principles, and incentives aimed at changing production, consumption and investment decisions. Policy choices must be informed through cross-sectoral coordination and policy alignment, appropriate forest governance, good political will, adequate finance, and a strong knowledge base.

One of the keys to success for a Green Economy is to promote collaboration among different sectors that have common interests in resources and ecosystem services.

REDD+ activities will have implications for a large group of people and institutions, with different interests, given the need to harmonize REDD+ efforts with, for example, energy, mining, and agriculture policies.

A major country needs assessment carried out in 2012 jointly by the UN-REDD Programme and the Forest Carbon Partnership Facility (FCPF) found that 'very urgent' support was needed in 52% of countries for the identification of major inconsistencies between the objectives of the REDD+ strategy and other sectors (such as transport, agriculture, energy, mining,

Economic Opportunities
of REDD+

and tourism) and ways to address them. Over 60% noted a very urgent need to assess how existing laws, policies, programmes and practices provide incentives that promote deforestation and forest degradation. Analysis of Readiness Preparation Proposals (RPPs) indicates that 66% identify challenges in cross-sectoral interventions that pose risks for REDD+ implementation. Effectively addressing the drivers of deforestation across a range of sectors is arguably the largest challenge for REDD+. Linking REDD+ with a wider transition to a Green Economy would lend momentum to this effort.

Drought in Tefe, Amazonia, along Amazon River; prolonged drought can result in unprecedented die off of key plant and tree species.
Rodrigo Balela / Getty Images

Economic Opportunities of REDD+

Figure 5 Economic and social impacts of REDD+ management actions on different stakeholders within a landscape

LANDSCAPE | ECOSYSTEM

Agriculture — People — Forests — Water

Mediating factors
Governance, institutions tenure & property rights

Ecosystem services

Human well-being

REDD+ management action across the landscape
Addressing agricultural drivers, protected areas, forest management and restoration

Approaches for implementing management actions
E.g.: Integration of social and economic objectives and/or safeguards; integrated landscape approaches; decentralisation; market mechanisms (payment for ecosystem services; certification); monitoring (including social/economic impacts)

OPPORTUNITIES

Economic
- Increased income at national level (royalties)
- Increased local job creation and income opportunities
- Increased access to credit and other markets
- Improved local infrastucture (roads, communications)
- Conserved or restored ecosystems services
- Land sparing, increasing domestic food budget
- Poverty reduction
- New businesses

Social
- Tenure security
- Connection to local networks (social capital) and collective action
- Empowerment
- Development of new skills and expertise
- Valuation and recognition of indigenous knowledge
- Conserved or restored ecosystem services
- Development of new social infrastructure
- Job creation

RISKS

Economic
- Long gestation and uncertainty
- Loss of livelihood
- Loss of land
- Inequitable distribution of benefits
- Loss of jobs
- Land grabs
- Rebound effect
- Corruption during land transfers
- Centralised governance
- Burden of costs
- Increased inequality

Social
- Displacement
- Loss of control and authority
- Lack of participation in decision making
- Undermining local capacity
- Knowledge and ecological practices
- Suppression of traditional way of life
- Health risks
- Loss of arable land
- Changes in social balance (migrant workers)
- Social conflict

SOURCE: Adapted from Parrotta, Wildburger & Mansourian (2012)

4. REDD+ and the private sector

Logger working with a logging company which is FSC certified; part of a sustainable forest management project aimed at improving the lives of the local tribal people and conserving the forest, Guyana.

Simon Rawles / Getty Images

The stakes of the private sector in REDD+ range from the impact of policies to reduce emissions on existing land-use practices, to an interest in ensuring long-term profits from sustainable and renewable biomaterials production, to finance institutions looking to profit from selling credits in the voluntary and compliance carbon markets. This has generated interest in REDD+ from sectors including forestry, pulp & paper, project implementers, and financial institutions.

Their attention has been fostered by factors including:

- The adoption and promotion of reassuring standards and safeguards reducing legal risks (such as the UN-REDD's Social and Environmental Principles and Criteria, based on the UNFCCC Cancun safeguards);

- The stronger articulation of the business case for natural capital investments. From a financial perspective, forest assets have proven to be low in volatility and to have low correlation to other asset classes. Institutional investors have already devoted an estimated US $50 billion to the forest asset class globally;

- A greater appreciation of the other benefits that these investments can deliver (generation of rural employment, climate mitigation and adaptation, and safeguarding of biodiversity); and

- Prudent diversification.

Currently, many actors in the private sector and capital markets underpin and benefit from deforestation and forest degradation (particularly in areas such as timber extraction, energy production, agricultural commodities, and infrastructure). However, the economic use of forests can change track to a more sustainable approach through a combination of efficiency gains and more fundamental step changes, particularly by:

- Increasing efficiency and inducing changes in the sectors that drive deforestation (higher land efficiency in agricultural production, greater exploitation of already deforested land, shifts from conventional agriculture to agro-forestry and a greater focus on tree-crops);

- Enhancing land efficiency in the production of conventional forest products;

- Establishing markets and creating monetary value for forest-based ecosystem services that, despite their

> Currently, many actors in the private sector and capital markets underpin and benefit from deforestation and forest degradation. However, the economic use of forests can change track to a more sustainable approach.

REDD+ and
the private sector

tremendous value to societal and economic well-being, remain formally unvalued.

It seems likely that REDD+ will be successful in the long term only if the private sector finds sustainable forest management to be an attractive investment. Sound principles for encouraging private sector action and engagement in REDD+ include:

- **Maximise leverage**. Public funds invested in REDD+ should seek to leverage the maximum investment of private sector finance. Public funds used for certification costs, for example, would leverage a different amount of private investment than the use of public funds that guarantee the price of REDD+ credits.

- **Focus on the drivers of deforestation and degradation**. For REDD+ to be successful, incentives, disincentives and enabling measures will need to reach the actors responsible for addressing the drivers of deforestation and at the appropriate scale.

- **Link payments to results**. This principle of private sector investment needs to extend to the public sector, whose funds should provide incentives to private sector activities in a competitive manner

that produces measurable results, such as reductions in emissions, protection of biodiversity, and reduction of poverty levels.

- **Encourage demand-led approaches**. Governments could promote private sector investment beyond carbon, such as subsistence agriculture, forestry, and marketing of non-timber forest products, drawing on the skills, knowledge and networks of the private sector.

- **Avoid crowding out**. Donor investments in REDD+ should support private sector investment rather than crowding it out. Donor agencies should address market failures and risks, leaving other needs to the private sector.

Table 2 Pros and cons of forest investments

PROS		CONS	
Annual internal rate of return	Attractive return on investment (between 8 and 12%)	Cash flow profile	High initial investment; relatively long time lag for returns
Conservation of value	Long-term maintenance of value; low volatility; very low risk of complete loss of investment	Long running nature of the investment	Long-term capital lock-up; difficulties regarding early exit (difficult valuation of assets)
Diversification	Highly recommended for portfolio diversification; not correlated to other products/ asset classes of capital market	Track record	Relatively young asset class; limited experience with product
Positive external effects	Positive ecological and social impacts; "charismatic" asset	Risk assessment	For outsiders, risk assessment is very difficult

SOURCE: Grulke et. al. (2012)

Sustainable forestry and agricultural investment – a mango plantation in Volta region, Aboasa, Ghana.
Max Milligan / Getty Images.

5. Strengthening forest governance: a rights-based approach to REDD+

La Paz Waterfalls, Costa Rica.
John Colett / Getty Images

Strengthening forest governance:
a rights-based approach to REDD+

Forest sector governance should build on principles of transparency, full and effective participation of stakeholders, accountability, coordination and capacity to address key issues such as forest tenure, land use planning, forest management and forest revenues and incentives.

The benefits from forests to the rural poor and to developing country treasuries would increase substantially if illegal logging could be effectively addressed. Currently, an estimated US $30-100 billion per year is generated by illegal logging, often fuelling local and regional insecurity and conflict. This highlights one important socio-economic reason for improving forest governance and law enforcement in the context of REDD+ and a Green Economy.

Ultimately, the legitimacy of REDD+ will depend on legal clarity over which institutions have the authority to make decisions, who has the right to participate in the decision process, who has tenure and rights over forests, and ultimately who receives REDD+ payments. This boils down to whose rights will be secured in the interest of tenure clarity under REDD+. The REDD+ safeguards under the UNFCCC, combined with the principle of full and effective participation of indigenous and local communities, and the free, prior and informed consent promoted by the UN-REDD Programme and others, provide a constructive starting point for the required consultations.

Since most individuals and communities living in tropical forest regions do not have formally designated rights to forests, how these rights are defined at project and national levels will determine the equity of forest carbon projects. The larger actors tend to be favored by government bureaucracies and current policies. Serious conflicts over tenure insecurity are not easy to resolve, and piecemeal project interventions are insufficient in the absence of broader national policies. REDD+ has been used by some policy makers to promote land rights of local people. For example, in Brazil REDD+ project proponents have given high priority to clarifying land tenure at their sites through coordination with ongoing national efforts to link land tenure reform with environmental compliance. Forest tenure is more fragile in many other countries, with contradictory legal frameworks and competing claims to forest lands. Resolving land tenure and ensuring lasting social benefits to key stakeholders, in particular the rural poor, is a key challenge both for REDD+, and for a Green Economy transition. The additional investments into natural capital and Payments for Ecosystem Services that could result from a Green Economy transition will require wide societal acceptance, which can only be built on the basis of the full and effective participation of key stakeholders; secure tenure rights; and equitable benefit sharing mechanisms. The progress made under REDD+ in these areas can serve to inform Green Economy efforts.

6. Practical tools to link REDD+ and a Green Economy

Practical tools to link REDD+ and a Green Economy

- **Developing alternative sources of income**. REDD+ will need to balance reduced deforestation and forest degradation with alternative sources of income for resident communities that depend on forests for their income. REDD+ revenues could be a starting point for developing alternative and sustainable sources of income for affected communities.

- **Planning and analysis to ensure multiple benefits from REDD+ through a landscape approach**. Careful planning is needed to prevent production or extractive activities simply shifting to other communities or ecosystems ("leakage"). The landscape scale provides a way to address multiple demands on land and resources, helping to conserve forests while providing non-timber forest products to the rural poor and supplying ecosystem services. Spatial planning can identify where forests are performing, or could perform, multiple functions that are important for local or regional communities, or where new activities might best be located.

- **Measuring climate change impacts and costs more accurately and cost-effectively**. Judging from the range of prices of carbon on international markets, the increasing insurance costs in vulnerable areas, and many other uncertainties, more work on the economics of climate change seems well justified. Issues such as the interaction between mitigation and adaptation will influence any calculations of benefits. The feedbacks, delays and non-linearity in changes in ecosystems, and therefore any tipping points, and the risk preferences of users and the economic context are also critical factors that deserve more academic study.

- **Developing metrics for adaptation**. Much of the discussion on REDD+ has been on carbon sequestration, not least because a straightforward metric could be used to determine effectiveness: amount of carbon stored. The adaptation benefits of forests receive far less attention, at least partly due to the difficulty in measuring the benefits of adapting to climate change. Within current limitations, establishing a baseline and time period for measuring the benefits of adaptation over the costs of not acting remain a challenge that must be met if REDD+ is to meet its potential.

- **Identifying and Quantifying the multiple benefits of forests**. Research can help identify options that can ensure that
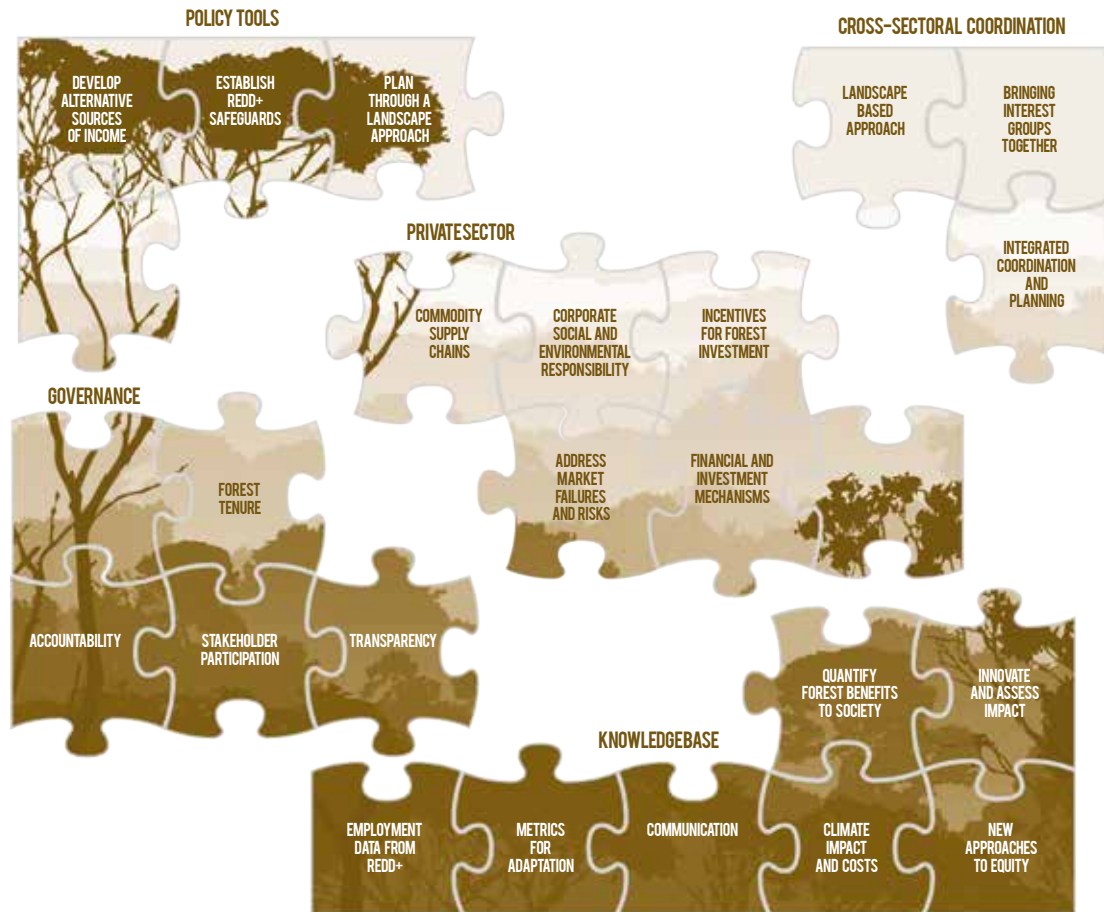
Practical tools to link REDD+ and a Green Economy

any change in forest cover provides the maximum overall benefits to society, identifying areas of forests with high carbon storage, as well as areas that deliver multiple benefits from ecosystem services or social values that are beyond a monetary price.

- **Developing new approaches to equity**. Issues of what benefits, and in which form, go to which stakeholders require greater attention, based on initial experience from pilot projects and other Payments for Ecosystem Service schemes.

- **Seeking better data on the employment implications of REDD+ and a Green Economy**. The long-term livelihood and employment implications of converting a carbon-rich forest to other uses, the role of employment as part of agriculture (a main driver of deforestation, yet a source of growth in low-income countries), including the informal sector, and related issues need to be quantified if the full implications of REDD+ are to be understood.

- **Designing innovative forest management practices** that support both profit generation and capital appreciation of forest stocks, while also providing benefits to forest dwelling people.

- **Communication** with the full range of stakeholders is essential if REDD+ is to succeed in reaching its potential as an important part of the Green Economy. The principles of transparency, open communication, and incorporation of local and traditional knowledge into decision-making will contribute to its success.

Practical tools to link REDD+ and a Green Economy

Figure 6 Enabling REDD+ to support a Green Economy

POLICY TOOLS
- DEVELOP ALTERNATIVE SOURCES OF INCOME
- ESTABLISH REDD+ SAFEGUARDS
- PLAN THROUGH A LANDSCAPE APPROACH

CROSS-SECTORAL COORDINATION
- LANDSCAPE BASED APPROACH
- BRINGING INTEREST GROUPS TOGETHER
- INTEGRATED COORDINATION AND PLANNING

PRIVATE SECTOR
- COMMODITY SUPPLY CHAINS
- CORPORATE SOCIAL AND ENVIRONMENTAL RESPONSIBILITY
- INCENTIVES FOR FOREST INVESTMENT
- ADDRESS MARKET FAILURES AND RISKS
- FINANCIAL AND INVESTMENT MECHANISMS

GOVERNANCE
- FOREST TENURE
- ACCOUNTABILITY
- STAKEHOLDER PARTICIPATION
- TRANSPARENCY

KNOWLEDGE BASE
- QUANTIFY FOREST BENEFITS TO SOCIETY
- INNOVATE AND ASSESS IMPACT
- EMPLOYMENT DATA FROM REDD+
- METRICS FOR ADAPTATION
- COMMUNICATION
- CLIMATE IMPACT AND COSTS
- NEW APPROACHES TO EQUITY

7. Conclusions and recommendations

Tall Bamboo cane forest
– East Nusa Tenggara,
Indonesia.
Aulia Erlangga / CIFOR.

Conclusions and recommendations

Conclusion 1. The Green Economy provides a useful framework within which REDD+ can prosper. Improved coordination among governments, international agencies, and the private sector dealing with these issues is essential.

Governments, international agencies, and other investors should significantly increase coordination to create an enabling environment that stimulates trust between REDD+ investors and proponents and other investors in sustainable rural landscapes. Linking REDD+ to a Green Economy will require a convergence of multiple outcomes that requires multiple sources of support and that demands a stakeholder-supported enabling policy environment. For example, governments can take advantage of REDD+ performance-based and verifiable and accountable systems to provide lessons learned to Green Economy initiatives such as inclusive wealth accounting and the UN-endorsed System for Environmental Economic Accounting (SEEA).

The concept of a Green Economy potentially has leverage to drive broader policy reforms and changes in business-as-usual economic interests; it provides new economic incentives and investments, new information and new actors, interests, and coalitions. It addresses wider societal drivers of deforestation and provides new tools to address these, such as a green fiscal framework, sustainable public procurement, and new commodity standards embracing certification and fair trade. All of these fit well with REDD+ and successful implementation of REDD+ activities can demonstrate the Green Economy in action. While getting REDD+ up and running may require donor and government funding that is focused on carbon sequestration, long-term success in reducing deforestation and delivering multiple benefits will require many sources of funding that are based on meeting the wide range of demands for forest goods and services, from domestic and international sources.

REDD+ can be most successful when it is supported by an enabling environment that includes Green Economy elements such as good governance, law enforcement, land tenure reform, sustainable supporting financial mechanisms, and equitable distribution of benefits. REDD+ activities must be designed with full consideration of national development and food security objectives, providing numerous economic

Conclusions and recommendations

and social opportunities as well as posing some risks in its implementation. More generally, implementing REDD+ within a Green Economy context requires a strong knowledge base and demands new planning tools that value natural capital, strong political will, improved forest governance, better coordination among sectors and policies, and sustainable finance. Success in these areas will facilitate progress towards sustainable natural resource management, and building natural capital.

Policy instruments that promote green innovation and investments in support of REDD+ and a Green Economy should comprise a mix of measures. These can include institutional reforms (e.g. land tenure), regulations (e.g. norms and standards, including safeguards), information polices (e.g. eco-certification, public disclosure, public marketing and branding, education campaigns), risk mitigation (e.g. carbon buffers, mandatory insurance, guarantees), and pricing policies that get the incentives right (tradable permits, taxes and subsidy reform).

The long-term success of REDD+ and a Green Economy depends on active participation by the private sector. Action and engagement in REDD+ by the private sector needs public support such as appropriate regulations and

incentives to maximize leverage; a focus on the drivers of deforestation and forest degradation; linking payments to results; encouraging approaches led by consumer demand that may go beyond carbon and focus on, for example, "green products", biodiversity through ecotourism and other such industries; and public support along with donor investments that may focus more on long-term sustainability than short-term financial profit.

Conclusion 2. To date, REDD+ activities have focused mostly on reducing greenhouse gas emissions from forests, but REDD+ needs to expand to give significantly greater attention to benefits beyond carbon.

Governments well recognize that climate change remains a major risk for both people and the planet. Carbon sequestration remains an essential service provided by forests and was the initial focus of many governments in REDD+ due to questions of feasibility of measuring and monitoring the success of REDD+ activities. The 2013 report of the Intergovernmental Panel on Climate Change has provided even stronger support for action to address climate change, of which REDD+ is an important example. At

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the same time, UNFCCC Parties and other REDD+ stakeholders increasingly recognize the potential multiple environmental, social and economic benefits from REDD+. This includes the mutually reinforcing role between REDD+, adaptation to climate change, and a Green Economy transition. But REDD+ needs to go far beyond carbon to address these additional benefits, and seek ways to quantify them.

The concepts of natural capital and ecosystem services have helped decision-makers realize that forests are more than just a place where trees grow to store carbon. The multiple values of forests are now starting to receive the attention they deserve, though many of these values are not yet reflected in markets or the decision-making processes of policy makers. Therefore, measures need to be put into place to identify and communicate the many benefits that forests provide to people so that the multiple values of forests are better reflected in decisions that affect national well-being. Continuing erosion of the natural capital represented by forests will undermine the foundation of economic growth, while maintaining natural capital at sufficient levels will be a key component of a Green Economy as well as providing long-term secure access to forest resources.

Seeking forest benefits beyond carbon makes REDD+ activities more complex, and could even imply short term trade-offs with its climate change mitigation objective. Yet an excessive preoccupation with fast-track mitigation at the expense of delivering immediate local forest benefits in REDD+ planning and resilient ecosystems is short-sighted and conflicts with the principles of safeguards. Giving the full range of benefits full consideration from an early stage is essential, since failing to account for both carbon and non-carbon benefits properly could lead to an underestimation of the importance of REDD+ to a national economy and thus a missed opportunity to attract investments and to enhance the benefits of properly managing a key national asset.

REDD+ is a knowledge-intensive approach that requires effective communication to all interested parties. The necessary knowledge can come from forest-dwelling people, foresters, politicians, social scientists, and many others. Such knowledge is needed to measure climate change impacts and costs more accurately and convincingly, ensuring that the costs and benefits are equitably distributed. Adaptation to climate change is urgent and often of greater interest to local people than the longer-term concerns about sequestration; but metrics for

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measuring adaptation need to be developed. The multiple benefits of forests need to be identified and quantified, to the extent possible, leading to better assessment of the impacts of innovative policies. And finally, the full implications of REDD+ need to be communicated openly and clearly to all those concerned, giving particular attention to the forest-dwelling people who will be most directly affected.

Conclusion 3. Equitable sharing of the benefits of REDD+ is likely to increase the sustainability of its impact by building support among a wider variety of stakeholders.

Different outcomes (positive or negative) are important to different stakeholders and over different time scales. Therefore, ensuring that REDD+ activities consider the perspectives of all stakeholders and future generations will require consultations with the relevant stakeholders and long-term planning on the values of potential social and environmental benefits of REDD+. Representing the needs of local communities enhances the chance that their well-being could be improved under REDD+ activities. Government agencies should design REDD+ activities that create new economic opportunities for local communities and the

forest-dwelling people who are interested in participating in REDD+, but have received insufficient attention to date. They are often in the best position to implement efforts to prevent forest degradation and promote sustainable management of forests; they have also shown that they can collect reliable data on the carbon contained in their forests, with minimal training.

The issue of forest tenure is central to the successful implementation of REDD+, as well as to a Green Economy transition. Most of the world's tropical forests have unclear or contested land tenure, and most governments largely retain statutory rights to forest land. REDD+ implementation requires the clarification and strengthening of land tenure and property rights, including the recognition of customary rights on forested land. Such clarification can build on local interests and will determine accountability in the delivery of carbon stocks as well as the distribution of benefits from financial transfers from REDD+. The risk of forest-dwelling people losing tenure to large commercial interests needs to be addressed under REDD+ activities.

REDD+ safeguards are essential to ensuring that forest-dwelling peoples are empowered to participate in decision-making and earn their fair share of benefits. When new

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activities are proposed in environments that have long been occupied by small communities (as is often the case in tropical forests), the resident peoples are often left out of the process, with more powerful forces gaining the vast majority of benefits. The Cancun safeguards established by the UNFCCC are designed to ensure that social and environmental benefits are provided to indigenous peoples and local communities. These safeguards could also inform other Green Economy investments related to natural resource use. They can offer a standard that can be used to promote progress by oversight groups and other interested parties.

To ensure that equity issues are well addressed, governments should implement REDD+ in a considered, step-by-step process. A rush to implement REDD+ risks entrenching existing tenure and governance, which are almost always detrimental to the rural poor. All REDD+ activities should be designed and managed in a transparent manner, with constant feedback from experience so that policies can adapt to changing conditions.

REDD+ national implementing agencies should re-direct national and local-level efforts to support positive outcomes at multiple scales that leverage environmental,

social, and economic resources from both levels. The first generation of REDD+ initiatives has tended to focus on national-level policy processes and local-level pilot projects, with little interaction between the two. These initiatives demonstrated the need for cross-scale coordination to address issues such as tenure, benefit sharing and monitoring, and the tenacity of vested interests and institutions opposing change to business-as-usual. Lessons learned to date underline the importance of addressing new forms of coordination among scales and stakeholders, and integrating REDD+ into broader development and land-use strategies. This would have the additional benefit of providing REDD+ with a stronger base from which to determine tradeoffs and complementarities at the national and international levels.

Conclusion 4. The success of REDD+ depends on the balance between conserving forest ecosystems and maximizing carbon sequestration; this balance needs to be informed by solid science.

Governments and others involved in REDD+ need to determine the appropriate balance between a focus on the natural forests that are rich in carbon and biodiversity and those

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forests where emissions can be reduced and carbon stored at the least cost. This is where the multiple benefits of REDD+ will need to enter the equation more in the future than they have in the past. Such issues will need to be addressed squarely as REDD+ moves further into its implementation phase, lifting REDD+ to a landscape planning platform that balances multiple land-use objectives across perspectives reaching 5, 10, 30, 50 or 100 years into the future. The interests of agriculture, forestry, biodiversity, fisheries, cities, industry, and others need to be part of comprehensive land use planning.

REDD+ in a Green Economy context can best be approached at a landscape scale. The body of knowledge to determine geographic priorities for REDD+ activities has grown considerably over recent years and shows that many benefits are provided in areas that are remote from the forests, such as downstream cities whose water depends on intact forests or markets that depend on sustainable production of forest products. A mosaic of natural and human-modified ecosystems that are managed in different ways to provide a range of benefits from alternative forms of land uses often seems to be the most effective approach, and the most appropriate scale for REDD+ to support a Green Economy. That said, many

commodity chains are international and may require intergovernmental collaboration to be managed sustainably. The slow progress to date on climate change or international trade indicates the difficulties that need to be overcome, so seeking national solutions at the landscape scale seems to most practical solution for the immediate future.

Governments could also embed risk-reduction strategies into REDD+ results-based payments through comprehensive and transparent risk assessment processes and buffer approaches. REDD+ could improve both the present net uptake of CO_2 in forests, and the longevity of their accumulated carbon stocks in an expanded area of forests. Doing so would promote benefits beyond carbon sequestration while improving the stability, efficiency and predictability of positive carbon incentives.

Conclusion 5. The main challenge for REDD+ in coming years will be to generate the estimated US $30 billion per year required to support performance based payments at an effective level. A stronger engagement of the private sector, and revised national incentive frameworks are needed to meet

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this challenge. The Green Economy can support both.

REDD+ is attempting an unprecedented new compact between rich and poor nations, and between the public and private sector, to generate the first-ever global-scale Payment for Ecosystem Services scheme. While the amount that is required to enable REDD+ to be fully effective (US $30 billion per year) may sound large in the usual context of the stakeholder groups associated with REDD+ (mainly local and indigenous communities, conservationists, and land-users), the amount will be spread among many countries and landscapes. It is also informative to consider this funding in terms of current national economies. For example, REDD+ payments of US $30 billion per year represent only a tiny proportion of the annual Gross World Product (GWP) of US $71,830,000 billion in 2012, and can be compared to official development assistance of US $133 billion in 2011. The governments of seven countries (China, France, Germany, Italy, Japan, United Kingdom, and USA) had annual expenditures exceeding US $1 trillion in 2012. Among the major oil companies ExxonMobil earned US $452,926 billion in 2012 (profits of US $41 billion), Royal Dutch Shell earned US $484,489 billion (profits: US $30.9 billion), and Gazprom earned US

$157,831 billion (profits US $44.5 billion). And compared to the US $480 billion per year currently spent on fossil fuel subsidies, REDD+ would require less than 7 per cent of these subsidies to be fully funded.

Shortage of money cannot be used as an excuse for not supporting REDD+ at the level required. Instead, the funding challenge for REDD+ needs to be seen in light of the opportunities for investing in sustainable development, and divesting from unsustainable development. This process of changing unsustainable finance into financing sustainable change is one of the main pillars of a Green Economy transition.

REDD+ needs to move from a bold pilot project into the mainstream of a new paradigm of funding flows. This new paradigm will reward sustainable development, and discourage 'business as usual' depletion of natural capital at the expense of wider societal gains. Setting the right mix of incentives for sustainable forest management and REDD+ at national scale, and combining this with disincentives for unsustainable practices that contribute to climate change, will be a major gain both for REDD+ and for a wider transition to a Green Economy.

The world needs a Green Economy and is already taking some promising steps
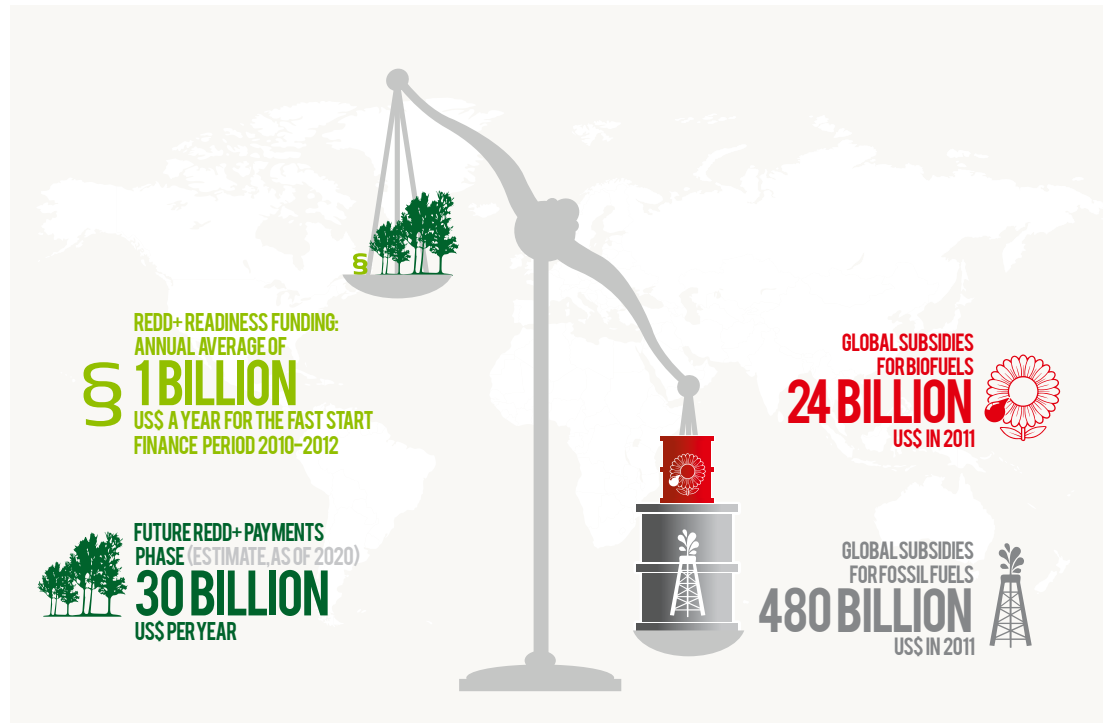
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toward decoupling resource consumption from improving human well-being. Many governments, at national, provincial, city, and village level, are seeking greater efficiency and equity in how energy, transportation, manufacturing, agriculture and other sectors deliver economic goods and services. REDD+ is well-placed to be a catalyst that can demonstrate the multiple benefits of putting the principles of a Green Economy into practice. These benefits include combining global benefits of climate change mitigation and adaptation with local to regional benefits of sustainable forest management to provide a foundation for the global transtion to a Green Economy.

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Figure 7 REDD+ and contradicting fiscal incentives

REDD+ READINESS FUNDING:
ANNUAL AVERAGE OF
§ 1 BILLION
US$ A YEAR FOR THE FAST START
FINANCE PERIOD 2010–2012

FUTURE REDD+ PAYMENTS
PHASE (ESTIMATE, AS OF 2020)
30 BILLION
US$ PER YEAR

GLOBAL SUBSIDIES
FOR BIOFUELS
24 BILLION
US$ IN 2011

GLOBAL SUBSIDIES
FOR FOSSIL FUELS
480 BILLION
US$ IN 2011

SOURCE: GCP (2012); IEA (2012); IISD (2012); IMF (2013); Voluntary REDD Database (2012)

MULTIPLE BENEFITS OF REDD+ IN THE LANDSCAPE

CURRENTLY AN AREA THE SIZE OF 25 FOOTBALL FIELDS IS BEING DESTROYED EVERY 60 SECONDS REDD+ WILL ENSURE THAT FORESTS AND TREES ARE MORE HIGHLY VALUED IN DECISION-MAKING

REDD is an effort to create a financial value for the carbon stored in forests, offering incentives for developing countries to reduce emissions from forested lands and invest in low-carbon paths to sustainable development. "REDD+" goes beyond addressing deforestation and forest degradation, and aims to make forest management and land-use more sustainable within the landscape, and promote conservation and restoration of forests.

When REDD+ prevents the loss or degradation of forest, this will result in multiple benefits in addition to protecting or enhancing carbon stocks. These include 'ecosystem-based benefits' such as conservation of forest biodiversity, water regulation, soil conservation, timber, forest foods and other non-timber forest products.

Various factors affect the extent to which these benefits are delivered: the type, location and condition of the forest involved, which REDD+ activity is undertaken, how it is implemented, and the dependence of the local population on forest resources. REDD+ can also lead to direct social benefits, such as jobs, livelihoods, land tenure clarification, carbon payments, enhanced participation in decision-making and improved governance.

BIODIVERSITY

FORESTS ARE THE HABITAT FOR
77%
OF GLOBALLY THREATENED BIRDS

TOURISM

ECOTOURISM GENERATES USD
77 BILLION
IN ANNUAL REVENUE GLOBALLY

COSTA RICA ALMOST DOUBLED ITS FOREST COVER IN A PERIOD OF
25 YEARS,
REINFORCING ITS GREEN IMAGE AS THE BASIS FOR ITS TOURISM INDUSTRY

PHARMACEUTICALS

PLANTS CONTRIBUTE TO THE DEVELOPMENT OF AT LEAST
25%
OF ALL PRESCRIPTION DRUGS

NON-WOOD PRODUCTS

FROM FORESTS CAN GENERATE
4 MILLION
PERSON-YEARS OF EMPLOYMENT ANNUALLY

BIG CITIES

33 OF THE WORLD'S
105 LARGEST CITIES OBTAIN THEIR FRESH WATER DIRECTLY FROM PROTECTED AREAS

WETLANDS

ARE VALUED TO PRODUCE USD
2,800
PER HECTARE OF ECOSYSTEM SERVICES EACH YEAR

INDIGENOUS PEOPLES

60 MILLION INDIGENOUS PEOPLE DEPEND ON FORESTS

ENERGY CONSUMPTIONS

OVER **2 BILLION** PEOPLE USE WOODFUEL FOR COOKING AND / OR HEATING

FOREST COMMUNITIES

FORESTS CONTRIBUTE TO THE LIVELIHOODS OF **1.6 BILLION** PEOPLE WORLDWIDE

FISHING

INTACT FOREST AND BUFFER ZONES AROUND RIVERS AND LAKES CAN REDUCE SEDIMENTS, BENEFITTING FISH POPULATIONS

TRADE

TRADE IN TIMBER AND OTHER FOREST PRODUCTS, IS ESTIMATED AT USD **330 BILLION** PER YEAR

ELECTRICITY PRODUCTION

UP TO 70% OF OPERATIONAL COSTS OF HYDROPOWER DAMS COME FROM SEDIMENT REMOVAL

46% OF KENYA'S POWER SUPPLY IS GENERATED BY HYDRO POWER WHICH DEPENDS ON THE COUNTRY'S FOREST WATERSHEDS

FOREST RESTORATION

IN NORTHERN TANZANIA IT TOOK ONLY 15 YEARS TO RESTORE 2 MILLION HECTARES OF FOREST AND AGRICULTURAL LAND, **DOUBLING** HOUSEHOLD INCOME

POLLINATION

FOREST-BASED WILD POLLINATORS ARE WORTH **BILLIONS** OF DOLLARS ANNUALLY TO FARMERS

FOOD SECURITY

TREE FOODS PROVIDE SOME **30%** OF RURAL DIETS IN BURKINA FASO

FLOODING

FORESTS CAN HELP REGULATE THE AMOUNT OF WATER REACHING RIVERS AND REDUCE THE RISK OR MAGNITUDE OF FLOODING

MANGROVES

ARE ESTIMATED TO SUPPORT 30% OF FISH CATCH AND ALMOST **100%** OF SHRIMP CATCH IN SOUTH-EAST ASIAN COUNTRIES

UN-REDD
P R O G R A M M E

FAO

UNDP
Empowered lives.
Resilient nations.

UNEP

Abbreviations
and acronyms

FCPF	Forest Carbon Partnership Facility
PES	Payments for ecosystem services
REDD+	Reducing emissions from deforestation and forest degradation in developing countries, and the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks
RPP	Readiness Preparation Proposal
SEEA	System for Environmental Economic Accounting
SFM	Sustainable Forest Management
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UN-REDD	The United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (UN-REDD Programme)
VCS	Verified carbon standards

Building Natural Capital:
How REDD+ can support
a Green Economy

THIS BOOKLET summarizes the report: 'Building Natural Capital: How REDD+ can support a Green Economy'. It was produced by a working group under the International Resource Panel. The report, on the current status and future potential of REDD+, describes the many benefits of forests and other ecosystems as a way of demonstrating that forests have multiple values beyond carbon sequestration and indeed are a foundation for sustainable societies.

The report advocates placing REDD+ into a larger landscape-scale planning framework that can, and should, involve multiple sectors (especially those that are driving deforestation, sometimes inadvertently). This would go beyond forests to also serve the needs of energy, water resources, agriculture, finance, transport, industry, trade, cities, and ultimately all sectors of a modern economy. REDD+ would thereby add value to the many other initiatives that are being implemented within these sectors. No longer simply an intriguing pilot effort, REDD+ would take its place as a critical element in a Green Economy.

Reflecting on the efforts already underway in some countries, the report closes by suggesting some of the next steps in what will surely be a long process of societies adapting to new conditions. REDD+ will need to be part of the social response to increasing agricultural and forestry outputs to meet future needs, while at the same time enhancing conservation of forests and ecosystem services.

UN-REDD
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