

UN-REDD PROGRAMME POLICY BRIEF

REDD+ and a Green Economy: Opportunities for a mutually supportive relationship

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1. Introduction

Deforestation and forest degradation contribute approximately 15-17 per cent of all greenhouse gases¹. There can be no cost-efficient solution to climate change that does not include mitigation of these emissions. At its 16th meeting, in Cancun, the Conference of the Parties (COP) of the United Nations Framework Convention on Climate Change (UNFCCC) adopted REDD+ as a means to reduce such emissions. REDD+ stands for Reducing Emissions from Deforestation and Forest Degradation; the 'plus' denotes the conservation of forests, enhancement of forest carbon stocks and sustainable management of forests.

The Cancun Agreement (Section I Para 10) adopted by the COP to the UNFCCC in December 2010 states that "addressing climate change requires a paradigm shift towards building a low-carbon society that offers substantial opportunities and ensures continued high growth and sustainable development, based on innovative technologies and more sustainable production and consumption and lifestyles, while ensuring a just transition of the workforce that creates decent work and quality jobs." The Agreement also notes that, "... social and economic development and poverty eradication are the first and overriding priorities of developing countries²..." as they address issues of climate change. Countries recognize this potential and reflect their commitment to the wider goals of the Cancun Agreement through vision statements in their national programmes on REDD+³. This is also the framework within which this policy brief is contextualized.

In this policy brief, we explore how investments in natural capital which includes non-renewable and renewable resources along with ecosystem services, such as those under REDD+, can promote development and economic growth, and especially growth that aims to alleviate poverty. In countries where REDD+ is a viable option,

investments in natural capital are most effective within the idea of a 'Green Economy'. A Green Economy results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities⁴. This pathway explicitly takes into account the economics of ecosystems and biodiversity. It is an operational tool or vehicle to achieve sustainable development. Governance and valuation tools that can measure and quantify indicators related to environment, governance and society are key components of this pathway.

With this approach, the goal is to help create a 'virtuous cycle' of investments in natural and human capitals⁵ that reduce the risk for REDD+ investments, and shores up delivery benefits for climate, development and conservation over the long term⁶. This is at the core of the UN-REDD Programme'sⁱⁱ focus on using REDD+ as a catalyst for green development.

2. REDD+ as a source of investments for Green Development

Developed and developing countries such as Australia, Brazil, Democratic Republic of the Congo (DRC), Denmark, Ecuador, France, Indonesia, Japan, Norway, Paraguay, Spain and the United Kingdom⁷ have embraced REDD+ and invested significant resources,⁸ including national programme development and bilateral and multilateral agreements to support REDD+ readiness.

At the sub-national level, even though there is not yet compliance demand for REDD+, pilot projects are selling carbon credits through the voluntary sector using approaches such as those developed by the Verified Carbon Standard and the Climate Community and Biodiversity

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Alliance⁹. A number of pilot projects are being developed in countries like Brazil, Cambodia, Cameroon, China, Ecuador, Tanzania, Viet Nam to name a few. In Indonesia alone, there are more than 100 projects being developed at different scales¹⁰.

Essentially REDD+, is an investmentⁱⁱⁱ focusing on retaining or enhancing natural capital, and provides an opportunity to enable countries to move towards realizing green development. Where conditions are favourable, REDD+ potentially represents an important, possibly even the pre-eminent, strand in a natural capital centric investment strategy. What is the premise for this strategy?

Firstly, it explicitly acknowledges that we are reaching limits in our use of the natural environment and that the true environmental and social costs of our current economic development and growth models must be taken into account in devising any future development solutions; and

Secondly, in contrast to strategies that focus on GDP led growth it explicitly addresses the need for a balance between income growth, jobs and equity.

Figure 1 presents this potentially synergistic relationship, which is explored in the following section in more depth.

3. REDD+ as a natural capital led investment strategy

REDD+ investments are focused on maintaining or enhancing natural capital, either through investments in forests or through slowing, halting or reversing drivers of deforestation and forest degradation^{iv}. The expected impacts of a natural capital led investment strategy, of which REDD+ would be a part, and initially a catalyst, are shown in Figure 2.

Figure 2 shows that by shifting emphasis from physical to natural capital, a REDD+ investment scenario is more likely to deliver better and lasting results for equity, jobs and growth as a whole, even if GDP growth may not be as high in the short term.

Most developing countries legitimately view the exploitation of their natural capital as a pathway to development. However, in most cases investments are aimed at converting natural capital into financial or physical capital, which undermines in the long term the basis upon which that capital relies. A growing body of evidence brought together by The Economics of Ecosystems and Biodiversity (TEEB¹²) studies suggests that this is far too narrow a strategy. In many developing countries, the persistence of poverty and degradation of the environment can be traced to a series of market, policy and institutional failures that make the prevailing economic model far less effective than it otherwise would be in advancing sustainable development goals. To correct this, it is increasingly recognized that the correct measure of development over time is change in wealth, not only GDP¹¹. The notion of wealth includes the social worth of all the capital assets an economy relies on including natural capital, such as forests.

In order to take advantage of development pathways through investments in natural capital, there will be a need to address these market, institutional, policy and legislative malfunctions. For instance, systematically accounting for the direct and indirect values of services provided by ecosystems, like water filtration, or coastal or watershed protection through markets or policy and regulatory measures would ensure this value is captured and made visible in the economy. TEEB has laid out the opportunities and state of knowledge in this regard. REDD+ is a global attempt to remedy 'market failure' with respect to the contributions of deforestation and forest degradation to climate change. REDD+ provides an opportunity to mainstream the inclusion of natural capital into decision making processes.

4. Leveraging REDD+ to generate additional investments in a Green Economy

UNEP's Green Economy Report suggests that an average annual additional investment of US\$40 billion is required to halve global deforestation by 2030¹³. This amount cannot come from public budgets alone, especially given on-going austerity efforts in most, if not all, developed countries. Financing for investments in a natural capital led strategy that includes REDD+ needs to come from a range of sources, should embody public-private partnership models and must play out at a large scale.

Mobilizing finance from private sources is critical to the success of any global REDD+ scheme as well as for a broader natural capital led investment strategy. This is the case especially where traditional ODA funding is decreasing. The World Bank's 'State of the Carbon Market' notes the somewhat stagnant position of carbon markets but suggests that optimism lies in the development of low-carbon initiatives including domestic emission reduction targets in countries like Brazil, China, India and Mexico¹⁴. In 2010, land-based projects supplied the largest volume (28 MtCO₂e) of credits transacted in the over-the-counter market where conservation efforts and international politics directed attention to REDD+. REDD+ pilot projects alone generated 29 per cent of credits transacted in the voluntary market¹⁵.

Public-private partnerships can fuse innovation with the requirements for scaling up that address drivers of deforestation and forest degradation through developing more efficient technologies and alternatives to allow REDD+ to work. The private sector can support transactions based on the sale of forest products and transfers such as payments of environmental services. Private sector involvement can raise additional capital and support the shift of important investments towards those that are fiscally and environmentally rational and responsible (environmental fiscal reform). Such investments would be conditional on the adherence of social and environmental safeguards and sustainable development objectives.

Environmental and social safeguards are important and must be seen as enablers, rather than deterrents, of private

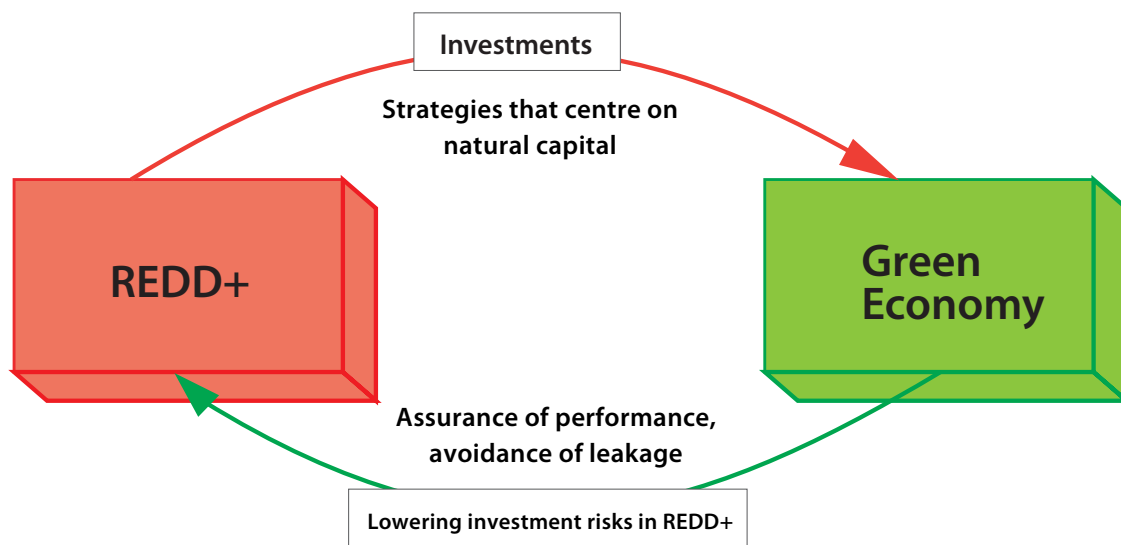


Figure 1: The potentially mutually beneficial relationship between REDD+ and a Green Development Pathway.

and public sector involvement in REDD+. Complying with safeguards can help avoid reputational and operational risk, clarify legal requirements that must be followed, as well as clearly set out the social and environmental requirements in what for many investors (public and private) will be a new area of business. Establishing clear land tenure and ownership rights up-front is key. This is important so that local communities and Indigenous Peoples can economically benefit from REDD+ activities. It is also a fundamental precondition for the mobilization of private finance and investment in REDD+ activities: project developers, forest concessionaries, lenders and investors will not, as a core requirement in risk management, consider investing in REDD+ activities unless clear and undisputed ownership systems are in place. Well-designed social and environmental standards can help to channel benefits to socially disadvantaged groups¹⁶. Most current programmes have standard setting as an integral part of getting ready for REDD+¹⁷.

4.1 Supporting REDD+ investments through a Green Development transition

Based on various scenarios for forest, UNEP's Green Economy Report¹⁸ demonstrates how forests could contribute 20 per cent more value added than "business-as-usual" (BAU) by investing an additional US\$40 billion (currently investment in forests are about US\$70 million dollars) for afforestation and forest conservation and paying forest landholders and users to conserve forests and improve forest management. Models and scenarios can help to understand the potential impact of these investments, as suitable experiences at appropriate scales are not available for analysis.

An initial study using the T21 model in Kalimantan in Indonesia¹⁹ compared BAU, especially with respect to oil palm expansion and returns, with scenarios that

prohibited all further expansion of oil palm ('REDD+ Only') and a 'Hybrid' strategy that allowed for oil palm expansion, but only on degraded lands. The preliminary results suggest that while BAU slightly outperforms the 'REDD+ Only' strategy, the Hybrid strategy convincingly outperforms BAU in terms of overall regional GDP growth with significant gains for GDP of the Poor'. The higher and more resilient growth is achieved by limiting potential damages of deforestation and increasing the benefits of forest conservation, through a strategy that preserves nature and its value. This shows the value of a green development perspective – e.g. natural capital focused strategies that build on REDD+ investments within the context of interactions among economic sectors and agents in the larger landscape.

Investments to improve productivity in the agriculture sector will be a crucial part of national strategies to reduce deforestation and forest degradation as well as to address human well-being, as drivers of deforestation and forest degradation lie mostly outside the forest sector²⁰. Increasing food production without agricultural expansion in forests implies the need to increase production on existing agricultural land. Investments can be directed to research and development and agribusiness, plant and animal health management, strengthening the supply and value chains for green products and farm inputs, and improving soil and water management whilst diversifying crops and livestock.

Such investments need to occur in activities that affect GDP for the poor. An increase in overall GDP coming from agricultural labor productivity is on average 2.5 times more effective in raising the incomes of the poorest quintile in developing countries than an equivalent increase in GDP coming from non-agricultural labor productivity. Green farming practices have increased yields, especially on small farms, between 79 - 180 per cent²¹.

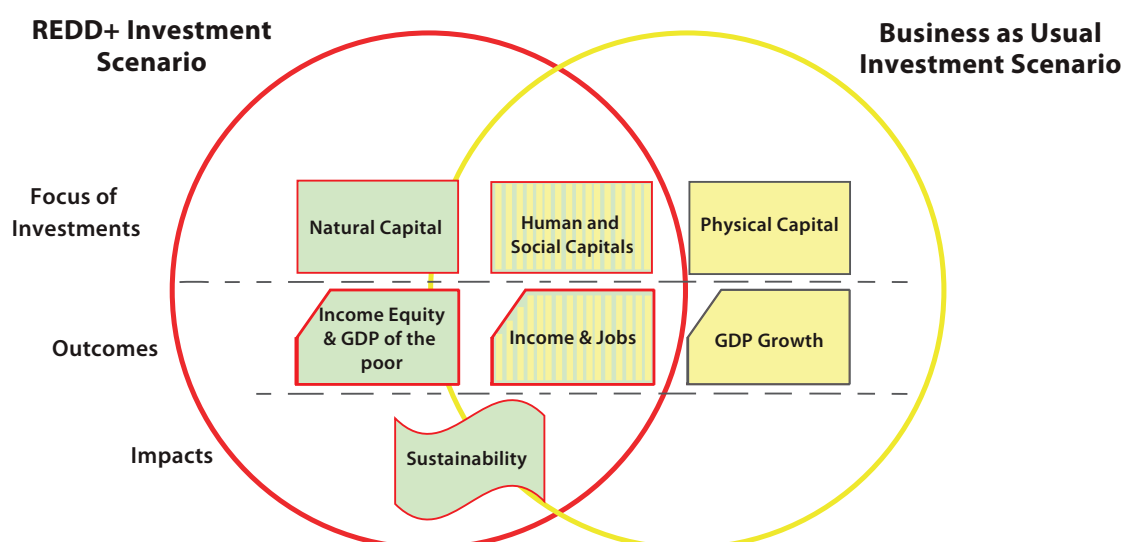


Figure 2: Potential relative impacts of natural capital (NC) led investment strategy versus ‘business as usual’ (BAU).

A 10 per cent increase in farm yields results in a seven per cent reduction in poverty in Africa, and more than five per cent in Asia²².

Other types of green economic policies will include those in the natural management sector and the transport, industry, mining and energy sectors.

The projections in the green scenarios indicate the potential of increasing green investment in the forest sector. But much depends on how the investment is made and in what policy and institutional context. Large investment programmes on the scale modeled in the Green Economy Report will be more challenging although they can draw lessons from existing experience in smaller investments. Global aggregate projections of this nature cannot, due to limitations of their design, capture the differences in response between countries with high forest cover and low forest cover, or between high income and low income countries²³. They do, however, indicate what can be achieved at a global level in the appropriate policy and institutional conditions.

Considering the nature of the reciprocal relationship between REDD+ and Green Development, three types of investments or actions are at the heart of achieving the desired results:

1. Enhanced efficiencies in the existing use of natural resources;
2. Gradual shifts (or ‘step-changes’), which make the cost of transition to green development politically and economically palatable; and
3. Targeted increases in the ‘GDP of the poor’^v, who tend to depend more on forests and natural resources in such landscapes.

These three types of investments will need to espouse both **valuation** – internalizing the costs of externalities and pricing goods with missing markets; and **technology**

transfer – in making natural resource sectors more efficient; in monitoring, reporting and verification activities; and in valuing and monetizing ecosystem goods and services.

4.2 REDD+ multiple benefits towards green development

Other ecosystem services, in addition to avoiding emissions or sequestering carbon, would deliver an economic value for a provisioning, cultural or regulating service²⁴. REDD+ investments can be leveraged to induce other investments that can deliver or realize economic value from these other ecosystem services. They help maintain or enhance the forests while providing a steady income source that would encourage additional financing. Thus REDD+ would deliver not only direct investments in forests but it would also help to lower thresholds for other investments into ecosystem services and the conservation of biodiversity.

As the TEEB report indicates, the rate and cost of biodiversity loss is to the detriment of human well-being and sustainable economies. REDD+ can deliver biodiversity conservation as an additional benefit for mitigation and development. Investments can be directed at a broad portfolio of forest land-use types, not just protected areas.

With the integration of multiple benefits, (including important social benefits^{vi}) REDD+ would deliver mitigation, conservation and development that conforms to a Green Economy paradigm. This reciprocal relationship serves to insure the REDD+ investments against erosion of their value, due to a loss of permanence or leakage.

5. REDD+ as an opportunity for change to green development

The opportunities for REDD+ and green development to have a mutually supporting relationship are apparent. How to leverage this opportunity has so far not been discussed. The UN-REDD Programme is initiating support to countries that are seeking to explore the mechanisms of this process. Although the work has commenced only recently, it is useful to explore how the approach might help to identify the kind of high-leverage investment opportunities needed. It takes a broader economic perspective and situates REDD+ within the economy of a larger landscape, province or country, i.e. REDD+ investments are not regarded in isolation of investments and plans for economic development as a whole. Using key stakeholder consultations, scenarios based on systems models and a variety of economic, ecological and spatial analyses tools, the Programme is working with countries to strengthen their capacity to use REDD+ as an opportunity for a Green Development transition. The Programme explores this based on the emerging work in two countries that have requested such support. They illustrate that while each country is unique, there are opportunities for standardizing approaches and tools, while customizing them to the context.

Indonesia has committed to realizing seven per cent GDP growth p.a. (by 2014) and social targets of reducing unemployment to between five and six per cent by 2014, while achieving a 26-41 per cent reduction in greenhouse gases emissions by 2020, and significantly and sustainably improving the well-being of its people. The natural resources sector, particularly forests and forestry, must play a significant role in the achievement of these targets.

The Government of Indonesia recognizes that the Letter of Intent²⁵ on REDD+ between Indonesia and Norway offers a unique opportunity to direct investments towards natural and human capitals. It has requested support from UNEP and the UN to help 'green' these proposals by explicitly looking at forests as an economic opportunity in terms of their products and services in Kalimantan. The initiative currently identifies 10 areas for intervention:

1. REDD+
2. Sustainable palm oil: increased use of degraded lands for sustainable palm oil production
3. Agriculture: investment in ecologically-friendly practices for smallholders
4. Forest management: investments to reduce pressure on natural forests
5. Freshwater management: improved freshwater and waterway management to support plantations, REDD+ afforestation along waterways
6. Improved fisheries management: support fisheries to better use the potential of inland fisheries
7. Better land-use and spatial planning and management: planning that recognizes the importance of ecosystem services and biodiversity conservation and what they deliver

8. Energy and mining: alternative energy sources, improved identification of and management at locations, reforestation and re-vegetation
9. Urban clusters: Identification of developing pools of human capital, such as in information technology and services related to the economic value of ecosystem services
10. Value chain development and infrastructure investment: encouraging more Foreign and Domestic Direct Investment for the development of Indonesia

Another country where this work is being explored is the Democratic Republic of the Congo (DRC). DRC is richly endowed with natural resources, with more than half of Africa's tropical moist forests and 50 per cent of Africa's freshwater resources. Production on forest farms constitutes the main source of food for more than 30 million people in the Congo Basin²⁶. Virtually all the population depends on fuelwood for energy and a large proportion are dependent on forest resources for food, medicines, income and building materials. These contributions are not reflected in the country's GDP.

This lowly contribution of forests - one per cent - to GDP of this forested country suggests great discrepancies in the actual (in terms of artisanal logging, charcoal production, subsistence forest farming, value of non-wood forest products and forest ecosystem services) and potential contributions of forests to the well-being of DRC's population.

The opportunities and the challenges for REDD+ and green development in the DRC are very different to those in Indonesia, although there are similarities. In the DRC, the approach taken to seize the REDD+ opportunity is as much a political process as a series of catalytic investments triggered by REDD+ funds. The principle of a strengthened partnership between the DRC Government and its financial partners around forests, REDD+ and climate change for a green development path is accepted at the highest level in the Government, and a framework for the continuation of the high-level dialogue is in place. A roundtable for the REDD+ investment phase in DRC is planned in the second half of 2012.

Catalyzing REDD+ investments towards enabling conditions for future growth, a decentralization policy and strategies at provincial and territorial levels, land tenure reforms and the efforts towards better governance and management of the forest sector are being explored as it is only under these improved conditions that further investments lift people out of poverty. The importance of the enabling conditions in the DRC cannot be underscored enough.

6. A roadmap for REDD+ in the context of green development

Risks associated with the green transformation include the manner in which funds are transferred, how benefits are distributed to reach the ultimate beneficiaries and how they conform with aid effectiveness practices. A gap in

knowledge and evidence of “how” green development options will actually benefit the poor and contribute to increased social equity needs to be filled from experiences at the national level in developing countries. If investments follow conventional tracks and a ‘trickle down’ philosophy, socio-economic and ecological equity will not be achieved.

A review of more than 100 pro-poor environmental finance case studies²⁷ shows that while financial tools are promising mechanisms to finance a shift towards a pro-poor and inclusive economy, they also require significant capacity building to become effective, especially in developing countries. Financial instruments including taxes, fees, loans, subsidies and market-based mechanisms require initial investments in capacity building to support accessible financial institutions, strong management structures, proven value chains and mature markets to provide viable social, environmental and financial returns.

In order to take advantage of the opportunity that REDD+ provides for green development and, conversely, the manner in which this makes REDD+ feasible in a number of environments, the following strategic and enabling steps will have to be taken:

A. Strategic

- 1. Increase public awareness and make the case for the mutually supportive relationship between REDD+ and Green Development.** Greater visibility is needed for investments in natural capital and this includes viewing REDD+ as a significant opportunity to motivate voters and consumers. New and decent jobs can be generated, including in new markets, particularly to increase incomes of the poor, and especially women and their share of GDP and evidence of this needs to be demonstrated.
- 2. Develop an investment strategy to extract growth from those sectors having high employment generating potential.** There is much evidence to show that in many growing economies, ecosystem restoration based activities create more jobs than many other options (e.g. directing investments towards labour intensive value-adding industries).
- 3. Focus on sectors which require lower investments for the same level of output.** Investments that make use of ecological infrastructure, rather than replacing it with physical infrastructure would make more sense. REDD+ and other investments that safeguard forest ecosystems in watershed areas, and thereby contribute to assuring steady flows of water quantity and quality would help lower costs of agricultural investments downstream or help prevent periodic interruptions to river-based transport systems. The same logic applies to energy generation from biomass or hydroelectricity.
- 4. Develop better indicators to guide investments for green development.** Mainstreaming the contributions of ecosystem services through better

indicators, such as ‘GDP of the Poor’, into development policy and national policies would help in designing more effective and efficient policies especially in priority areas (e.g. poverty alleviation, attainment of the MDGs). Planning agencies and finance ministries should adopt more diverse and representative indicators that focus less exclusively on growth and track the pace and progress of development. They also need to invest in joint learning processes that make use of different types of knowledge (including local knowledge) when designing programmes.

- 5. Enhance financial flows from the private sector.** Private sector investments are required to support a transformation to a green development. Forest-related investments provide a rich opportunity for businesses and financial institutions as they act as financial brokers and intermediaries, leverage resources and debt finance, apply bonds and securities to the forest sector. Risk management and insurances are key enabling factors.

B. Enabling

- 6. Expand the scope of the REDD+ agenda.** As countries progress and develop national strategies to address drivers of deforestation and forest degradation, the linkages with the other sectors and themes within national development planning become apparent. REDD+ is considered a forest sector issue in most countries. This does not enhance national multi-sectoral ownership of the REDD+ agenda, which is crucial if REDD+ is to meet the expectation for deep change.
- 7. Use appropriate tools and means.** Tools like trade-off analysis and participatory scenario analysis which are practically oriented and include computer-based models can deal with specific needs.
- 8. Ensure that processes related to REDD+ and the Green Economy are based on broad stakeholder consultations.** This would help to ensure that policies and investments reflect the developmental aspirations of all sections of society and are transparent and accountable.
- 9. Identify and utilize key champions.** This recognizes that change processes require leadership, commitment and the ability to inspire and motivate. Without global, national and sub-national ‘champions’ who can help make the case for change and provide leadership during change processes, it is difficult to see such processes succeeding.

7. Conclusions: towards a mutually reinforcing relationship

Transformation toward a green development will require a fundamental shift in thinking about growth and development, production of goods and services, and

producer and consumer habits. This transition depends mainly on changing attitudes and behaviors, addressing political economies including power asymmetries in planning and implementing economic policies, and investment patterns related to forest and natural resources management. This will require the creation of an enabling policy context and the awareness of all key stakeholders about what is truly at stake.

The potential afforded by REDD+ investments to safeguard, enhance and optimize environmental services and biodiversity to unlock the full potential of forests and the green economy should not be missed. The integration of ecosystem services in national policies and priorities is a cornerstone of this approach described in greater detail in a paper that underpins this policy brief. These additional efforts and the transformation towards a low carbon economy and culture would far outweigh the costs of inaction required to extend the benefits of REDD+ beyond carbon.

There is now a unique opportunity to link REDD+ and our understanding of the benefits that green development can deliver in order to help create a mutually supportive relationship between the two. Taking into account the appropriate safeguards, it is time to realize this opportunity and make its advantages over business-as-usual tangible and visible.

Endnotes

¹Five types of sustainable capital are described, from where we derive goods and services – see for example <http://www.forumforthefuture.org/>

²United Nations Collaborative initiative on Reducing Emissions from Deforestation and forest Degradation (REDD) in developing countries (www.un-redd.org). The UN-REDD Programme is a collaborative partnership between FAO, UNDP and UNEP.

³'Investment' is used in the broad sense where various types of capital are committed by a range of public and private sources for future positive returns.

⁴For example, by addressing conversion of forests to agriculture, settlements and other non-forest uses.

⁵Ecosystems such as fresh water, coral reefs and forests account for between 47 per cent and 89 per cent of what the UN calls "the GDP of the poor," meaning the source of livelihoods for the rural and forest-dwelling poor.' TEEB.

⁶These may include jobs, livelihoods, land tenure clarification, carbon credit payments or enhanced participation in decision-making under stronger governance for example.

⁷According to earlier IPCC assessments, more than 30% of all GHG emissions come from the land use, land use change and forestry sector and 18-20% is estimated to result directly from deforestation and forest degradation. See Smith, P., D. Martino, Z. Cai, D. Gwary, H. Janzen, P. Kumar, B. McCarl, S. Ogle, F. O'Mara, C. Rice, B. Scholes, O. Sirotenko, 2007: Agriculture. In Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [B. Metz, O.R. Davidson, P.R. Bosch, R. Dave, L.A. Meyer (eds)], Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

However, more recent assessments indicate that there are less emissions from forests, see for instance <http://www.nature.com/ngen/journal/v2/n11/full/ngen0671.html>; and Van der Werff, G. R., Morton, D. C., DeFries, R. S., Olivier, J. G. J., Kasibhatla, P. S., Jackson, R. B., Collatz, G. J., Randerson, J. T. 2009. CO2 emissions from forest loss. *Nature Geoscience* 2 (11), 737-738.

⁸Paragraph 6 in the UNFCCC Decision 1/CP.16: The Cancun Agreements: Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention. (Decisions adopted by the UNFCCC on its sixteenth session, held in Cancun, Mexico from 29 November to 10 December 2010).

⁹See for examples Readiness Plans (R-PP) for the DRC, Tanzania, Viet Nam and others developed by countries and supported by the UN-REDD Programme and the World Bank's Forest Carbon Partnership Facility.

¹⁰United Nations Environment Programme (UNEP). Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication. 2011. Available at <http://www.unep.org/greeneconomy>.

¹¹The notion of capitals was begun by the Forum of the Future in the early 1990's. They consist of Natural capital - The natural resources (energy, environment and matter) and processes needed by organizations to produce their products and deliver their services; as well as Social capital; Human capital; Manufactured capital; and Financial capital. See for example www.forumforthefuture.org/project/five-capital/overview.

¹²Helen Clark, the UNDP Administrator, noted the following at a side level organized by Indonesia, held during the United Nations General Assembly in September 2011 "Forests are essential for people's livelihoods as well as our shared objectives to curb climate change, and achieve the MDGs. The forest sector is also critical to strengthening all three pillars of sustainable development, and is thus a central issue in the lead up to next year's Rio+20 Conference. This is evident in Indonesia's example. With careful planning and appropriate incentives, REDD+ financing can be catalyzed to help Indonesia meet its targets of seven per cent GDP growth, food security, and the sustainable use of forest resources. REDD+ payments can be used to generate new investments – in areas such as renewable energy – that can spark both economic opportunity and poverty reduction."

¹³Norway signed a letter of intent with Indonesia in May 2010 for US\$ 1 billion for the development of a REDD+ strategy and operationalization components. Brazil, Ecuador and Guyana have also received funds from Norway. Countries have received funding from the UN-REDD and FCPF Programmes and bilateral donors.

¹⁴By 2010, the governments of Norway (primary donor), Denmark and Spain had contributed US\$ 94 million to the UN-REDD Programme. To date the Programme has allocated a total of US\$ 75.9 million a this includes funding to 12 countries including Bolivia, DRC, Indonesia, Panama, Tanzania, Viet Nam and Zambia had reached or gone beyond inception phases and Cambodia, PNG, Paraguay, the Philippines and Solomon Islands entered their elaboration or approval phases.

¹⁵Miles, Austin. 2011. Response to the Munden Report. Carbon Markets and Investors Association. (www.cmia.org).

¹⁶State and Trends of the Carbon Market 2010 World Bank .

¹⁷For example GDP does not account for variances in income or non-market transactions, nor does it take into account the value of all assets in an economy. It also ignores the value of important activities such as non-timber forest and subsistence production. It does not measure the sustainability of growth.

¹⁸TEEB. 2010. The Economics of Ecosystems and Biodiversity: Mainstreaming the Economics of Nature: A synthesis of the approach, conclusions and recommendations of TEEB.

¹³Forests in a Green Economy. A synthesis. 2011. United Nations Environment Programme. UNON Nairobi.

¹⁴World Bank. State and Trends of the Carbon Market. 2010, World Bank. http://siteresources.worldbank.org/INTCARBONFINANCE/Resources/StateAndTrend_LowRes.pdf

¹⁵Peters-Stanley, Molly, Katherine Hamilton, Thomas Marcello and Milo Sjardin. 2011. State of the Voluntary Carbon Markets 2011. Ecosystem Marketplace. www.ecosystemmarketplace.com/.../SOVCM2011

¹⁶See for example The ISEAL Alliance's activities of associate member GoodWeave in Nepal. ISEAL codifies best practice for the design and implementation of social and environmental standards systems, (www.isealalliance.org).

¹⁷Some of these processes include 'bottom-up' methods to identify and create sets of nationally relevant standards and supporting monitoring systems that enable the principles and criteria

¹⁸UNEP. 2011. Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication available at <<http://www.unep.org/greeneconomy>>

¹⁹This is a collaborative effort carried out by UKP4 and UNEP coordinated by Andrea Bassi from the Millennium Institute. Preliminary results are available on request.

²⁰Geist, Helmut L., and Eric F Lambin. Proximate causes and underlying driving forces of tropical deforestation. 2002. *Bioscience*; 52, 2; Pp 143-150; Angelsen, Arild and David Kaimowitz. 1999. Rethinking the Causes of Deforestation: Lessons from Economic Models. *Economic and Social Sciences*; 14, 1. Pp73-98

²¹Pretty, J.N., A.D. Noble, D. Bossio, J. Dixon, R.E Hine, F.W Penning De Vries and J.I Morrison. Resource-conserving agriculture increases yields in developing countries. *Environmental Science Technology* 2006 Feb 15;40(4):1114-9.

²²UNEP, 2011. Agriculture – Investing in natural capital. United Nations Environment Programme, Nairobi.

²³The relationship between investments made for REDD+ or the costs of implementing REDD at the district/local level and agricultural productivity is key; two important conditions include increasing agricultural productivity per land unit and ensuring that implementation costs (as well as opportunity costs) are catered for (see 'Brendan Fisher, Simon L. Lewis, Neil D. Burgess, Rogers E. Malimbwi, Panteleo K. Munishi, Ruth D. Swetnam, R. Kerry Turner, Simon Willcock and Andrew Balmford Implementation and opportunity costs of reducing deforestation and forest degradation in Tanzania. 2011. *Nature Climate Change*; 1; 161-164')

²⁴Ecosystem services are the benefits people obtain from ecosystems. These include provisioning services such as food, water, timber, and fibre; regulating services that affect climate, floods, disease, wastes, and water quality; cultural services that provide recreational, aesthetic, and spiritual benefits; and supporting services such as soil formation, photosynthesis, and nutrient cycling (Millennium Ecosystem Assessment 2005).

²⁵See Note 7

²⁶Justice, C., D. Wilkie, O. Zhang, J. Brunner and C. Donoghue. 2001. Central Africa forests, carbon and climate change. *Climate Research* 17: 229-246

²⁷United Nations Development Programme. International Guidebook of Environmental Finance Tools, UNDP and the World Bank 2011. (<http://www.climatefinanceoptions.org/cfo/node/261>)

An updated version of this paper will be prepared in the first half of 2012. Comments are welcome. Please contact: **Wahida.Patwa-Shah@unep.org** or **Julie.Greenwalt@unep.org**

The authors gratefully acknowledge comments and inputs provided by: Mario Boccucci, Tim Clairs, Barney Dickson, Niklas Hagelberg, Diego Martino, Linda Mumoki, Cheryl Rosebush, Jyotsna Puri, Thomas Sembres and Ibrahim Thiaw.

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PROGRAMME



The United Nations Collaborative Programme
on Reducing Emissions from Deforestation and
Forest Degradation in Developing Countries