BRANCHING OUT FOR A GREEN ECONOMY

REPORTING FORESTS

UNEP

INTERNATIONAL YEAR OF FORESTS • 2011

BRANCHING OUT FOR A GREEN ECONOMY

"Sustainable development is not a choice but an imperative and the only course possible in a 21st century world of rising populations and environmental risks. A transition to a **Green Economy** will happen, either by design or by default."

– UN Under-Secretary General & UNEP Executive Director Achim Steiner

REPORTING FORESTS serves as a journalist's guide to the role of forests in sustainable development and human well being. This guide provides a strategic overview on how to best renew the commitment to forests at a time when deforestation and degradation are still rampant. It also presents potential solutions to address business as usual (BAU) as it relates to a viable and more promising future.

The intention of REPORTING FORESTS is to:

- Emphasize the economic and human benefits surrounding ecosystem goods and services and biodiversity conservation;
- Explore opportunities for forest transformation that are presently available; and
- Increase awareness and coverage of these issues.

THE FYI ON IYF

The UN General Assembly has proclaimed 2011 as the International Year of Forests (IYF), inviting governments, the United Nations system, NGOs, the private sector and other stakeholders to come together to strengthen the sustainable management, conservation and sustainable development of all types of forests for the benefit of current and future generations.

IYF is a unique opportunity to increase public awareness about the key role forests and sustainable forest management play in building a greener, more equitable and sustainable future. The year-long series of events will build partnerships, showcase success stories and innovative solutions, and galvanize greater public participation in forest-related activities at all levels. Pinpointing one of our greatest natural resources, UNEP plans to further highlight the role of forests in national development and a Green Economy.

"It is also a moment of rising opportunities that many leaders in Africa are glimpsing from the potential for renewable energy to the extraordinary economic importance of Africa's nature-based assets such as its forests."

Achim Steiner
UNEP

REPORTING FORESTS encourages the media to help motivate government policy change related to forests. Reporting on the issues that challenge forest preservation and restoration can also stimulate a dialogue about the impact of forests, as well as the needs of our ever-growing population.

This guide tackles the forest debate with a three-pronged approach, focusing on 1) the value of forests for human development and well being, 2) the negative impact of BAU, and 3) transformative solutions for today and tomorrow.

WHY DO FORESTS MATTER & WHAT IS THEIR VALUE?

Providing a Foundation for Our Development

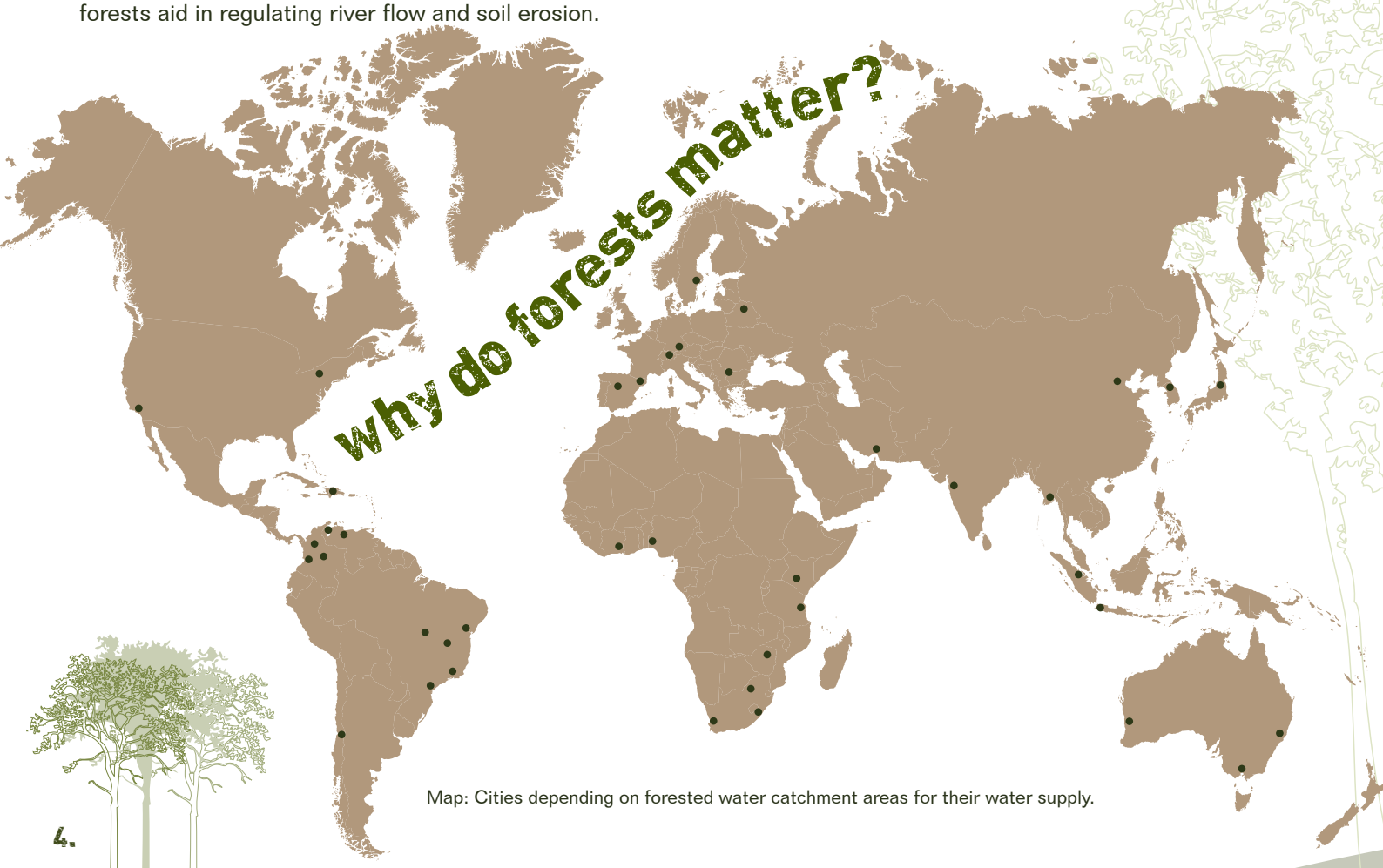
CLIMATE CHANGE: Our forests play a major role in the ongoing battle against climate change, sequestering CO2 into oxygen while building biomass and acting as storage containers for carbon. Tropical forests absorb 14% of the world's carbon dioxide emissions every year. Overall, forests store a quarter of all carbon on the earth (more than all the carbon in the atmosphere), significantly mitigating greenhouse gas (GHG) emissions (UNFCCC 2010). They also stabilize changes in local climates while boosting economies.

ECOSYSTEM SERVICES: Humankind benefits from a multitude of resources and processes that are supplied by natural ecosystems. Collectively, these benefits are known as ecosystem services and include products like clean drinking water and processes such as the decomposition of wastes. These services were popularized and their definitions formalized by the United Nations 2004 Millennium Ecosystem Assessment (MA). This grouped ecosystem services into four broad categories: provisioning, such as the production of food and water; regulating, such as the control of climate and disease; supporting, such as nutrient cycles and crop pollination; and cultural, such as spiritual and recreational benefits.

"Every single one of us, all seven billion, has our physical, economic and spiritual health strongly tied to the health of our forest ecosystems…people and our collective actions are the key to a sustainable future."

Jan L. McAlpine
Director, UNFF

WATER CONTRIBUTION: Forests provide water for many of our rivers, helping to secure the quality and clarity of what we drink and use every day. What's more, up to 45% of the largest cities in the world (for example, Los Angeles, Jakarta and Caracas) depend to some extent on forested water catchment areas for their water supply (Dudley and Stolton 2005). In addition, forests aid in regulating river flow and soil erosion.



Map: Cities depending on forested water catchment areas for their water supply.

FORESTS FACTS & FIGURES

Forests cover one third of the earth's land mass, performing vital functions around the world. Approximately 56% of forests are located in tropical and subtropical areas. But these green lungs of the earth are disappearing at the alarming rate of approximately 13 million hectares per year (for the period 1990-2005), equal to the size of Greece.

Approximately 1.7 billion tonnes of carbon are released annually due to land-use change, mainly from tropical deforestation. This represents about 17% of annual global CO2 emissions, greater than the amount emitted by the global transport sector.

An estimated 1.6 billion people rely to some extent on forests for their livelihoods, while more than two billion people – a third of the world's population – use biomass fuels, mainly firewood, to cook and to heat their homes. An estimated investment of US$30 billion in fighting deforestation and degradation could provide a return of up to US$4.5 trillion in products and services, while generating millions of jobs around the world.

Sources: FAO 2010, World Bank 2006, IPCC 2007, TEEB 2010, Nair and Rutt 2009

WEATHER REGULATION & AGRICULTURAL PRODUCTIVITY: Acting as weather system regulators, forests can reduce the devastating impact of storms and floods. Simultaneously, in helping to control erosion, they improve soil fertility for agriculture. In the United States, trees planted as wind breaks have been estimated to increase crop yields significantly, for example, by 23% for winter wheat (Korkt 1988). What's more, forests help us to further increase the yields of our crops because their reserves of genetic diversity allow improvement of crop strains and productivity (MA 2005).

BIODIVERSITY: Biodiversity is the backbone of forest ecosystems. Forests are rich in species compared to other ecosystems, providing habitats for more than half of terrestrial species, from Africa's gorillas to tigers in Asia. In addition to enabling progress in healthcare and science, this genetic diversity promotes the development of and income from new medicines and biotechnology solutions. And carbon storage – up to 50% of global terrestrial carbon – depends hugely on stable, resilient forests (Thompson *et al* 2009).

BIOMIMICRY or biomimetics is the examination of nature as a source of emulation or inspiration in solving human problems. For example, trees and bones achieve an even distribution of mechanical tension through the efficient use of material and adaptive structural design, optimizing strength, resilience, and material for a wide variety of load conditions. To distribute stress uniformly, trees add wood to points of greatest mechanical load. They arrange fibres in the direction of the flow of force, or principal stress trajectories, to minimize sheer stress. Engineers have incorporated these and other lessons learned from trees and bones into software design programs that optimize the weight and performance of fiber-composite materials. For instance, car parts and entire cars designed with these principles have resulted in new vehicle designs that are as crash safe as conventional cars, yet up to 30% lighter.

LIVELIHOODS: Forests provide homes, security and livelihoods for forest-dependent populations. In 2006, the World Bank estimated that 60 million indigenous peoples depend directly on forests for their survival. Indeed, forests sustain nearly half of the population in the developing world, providing wood for fuel as well as non-timber products like nuts, rubber and medicines. For many of the poor in rural settings, ecosystems and the biodiversity they contain are their primary assets and source of livelihoods.

ENERGY AND FOREST PRODUCTS: In many developing countries, more than 80% of total energy consumed comes from forests (MA Biodiversity Synthesis 2005). Over one third of the world's population (or 2.4 billion) relies on wood and other plant-based fuels for cooking and heating (IEA 2002). The global trade in timber and other forest products is estimated at almost US$330 billion/year. Its value multiplies exponentially as it is processed into a myriad of products – paper, charcoal, medicine – that are often taken for granted because we use them every day.

"…much of what humans need to be able to thrive is to be found in our forests."

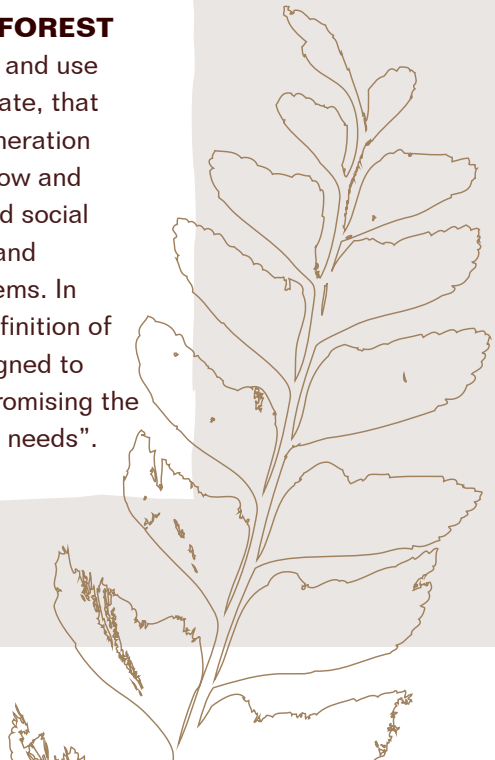
Helen Clark
UNDP

RECREATION/TOURISM: Aside from parks and recreational sites, forests can provide a sense of sanctuary towards the preservation of particular species such as primates in the Congo Basin. The protection of Virungu and Bwindi Afro-montane forests of Eastern and Central Africa, home of the mountain gorilla, show positive benefits as opposed to costs of maintaining them (Hatfield and Malleret-King 2004). Some countries have been able to build up lucrative nature-based tourism industry. For instance, in Kenya, tourism is the second most important foreign-exchange earner and a huge contributor to the economy.

CULTURE: It is well recognized that the intrinsic value of forests, and the spiritual and sacred sites in forests, are of great importance to local communities and our cultural identity. Millions of indigenous people have historical claim to their trees and land but poor or no legal rights to validate that claim. This situation weakens their ability to protect forests. It also restricts them from tapping into available resources for maintaining the forests that are at the heart of their well being.

We reap priceless ecological, economic, social and health benefits from forests every day of our lives. Despite this, the inherent value of forests is being severely undermined every year as they are lost, harvested or cleared for agriculture (World Bank). We are destroying the very forests we need to stand by and protect.

HOW DO YOU DEFINE SUSTAINABLE FOREST MANAGEMENT (SFM)?: The stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfill, now and in the future, relevant ecological, economic and social functions at local, national, and global levels, and that does not cause damage to other ecosystems. In keeping with the Brundtland Commission's definition of sustainable development, the principle is designed to meet "the needs of the present without compromising the ability of future generations to meet their own needs".



"The forest is not a resource for us, it is life itself. It is the only place for us to live."

Evaristo Nugkuag
Ikanan

WHAT ARE THE HIGH COSTS OF BUSINESS AS USUAL?

Disrupting the Progress Towards a Green Economy

Stripping forest assets or business as usual (BAU) is destroying our development opportunities and undermining the potential contribution of forests for the transformation to a low-carbon Green Economy. This impact adversely affects the immediate and long-term benefits of forests – socially, environmentally and financially. One example: deforestation and degradation increase sedimentation and decrease water flow, which results in a negative impact on dams, lakes and seas, compromising water power sources and fisheries. Agricultural expansion, unclear land tenure, illegal logging and corruption add fuel to the fire. If there are no major changes in policy and in the patterns of investment, the prediction is grim at best.

To predict what is likely to happen to the forest sector in the future, it is necessary to examine the drivers of deforestation and forest degradation.

Global deforestation continues at an alarming rate. Whether for cash crops or subsistence, agriculture and intensive farming are the largest drivers of deforestation, ranging from a share of 31% in Latin America to 88% and 89% in Southeast Asia and Africa, respectively.

WHAT IS A GREEN ECONOMY?: Greening the economy refers to the process of reconfiguring businesses and infrastructure to deliver better returns on natural, human and economic capital investments. Simultaneously, it works to reduce greenhouse gas emissions, extracting and using fewer natural resources such as forests, thereby creating less waste and reducing social disparities.

The losses in our natural capital are closely linked to the environmental consequences of destruction. Forests are by far the most important habitat for globally-threatened birds, supporting 87% of the species (www.birdlife.org/action/science/species/global_species_programme/red_list.ht). And as forests shrink in size and change composition, fire regimes change, invasive species increase along with pests and disease, and animals are left without habitats.

biodiversity is the backbone of forest ecosystems

BIODIVERSITY: Biological diversity is the degree of variation of life forms within species and between species in a given ecosystem, biome or an entire planet. It is also a measure of the health of ecosystems; greater biodiversity implies greater health. In part a function of climate, tropical regions are usually rich, whereas polar regions support fewer species. Rapid environmental changes typically cause extinctions. One estimate is that less than 1% of species that have existed on earth are living today.

Economists around the world have proven that by not integrating the values of natural resources into their budgets, countries are paying a great price. The World Bank has estimated that the governments of some of the poorest countries in the world lose over US$15 billion/year as a result of illegal logging – money that could be spent improving people's lives. However, government policy often favors competing and short-term revenue-generating activities for forest land and its products, such as conversion to palm oil or other cash crops.

In effect, forests are more valuable standing than when cut down. There are some promising developments. A number of countries have invested in mangrove restoration in order to improve defense systems against their oceans. In Vietnam, a US$1 million investment has been widely acknowledged for its environmental and economic benefits, saving US$7.3 million/year on dyke maintenance (TEEB 2010).

"We have already felt for ourselves the consequences of environmental damage, such as landslides, floods, forest fires and so on. We must encourage a form of development that is environmentally friendly."

President Susilo Bambang Yudhoyono
Indonesia

what is a green economy?

"Investing in nature is investing in development and, at the same time, investing in the achievement of the Millennium Development Goals (MDGs)."

Julia Marton-Lefevre
Director General of IUCN 2010

HOW CAN FORESTS CONTRIBUTE TO GREEN GROWTH?

Investing in a Future That's Full of Potential

A future where forests contribute fully to our development, growth and well being is still possible. By engaging and working with both government and private sectors, well-managed forests could provide public savings and returns on investment, while helping to build other sectors, provide jobs, overcome poverty and achieve sustainability.

Conserving forests and increasing their area is now recognized as a business opportunity by governments, corporate leaders and entrepreneurs alike. At the same time, a growing domestic demand in developing countries is fueling the growth of smallholder and community-managed forestry, plantations and enterprises. According to a UNEP study, the economic returns on reforestation/afforestation can be up to 79%.

Table 1: *Some estimated values of ecosystem services from tropical forests (TEEB 2010)*

ECOSYSTEM SERVICE	VALUE
Food, fibre and fuel	Lescuyer (2007) values the provisioning services of Cameroon's forests at US$560 for timber, US$61 for fuelwood, and US$41-70 for non-timber forest products (all values per hectare per year).
Climate regulation	Lescuyer (2007) values climate regulation by tropical forests in Cameroon at US$842-2265 per hectare per year.
Water regulation	Yaron (2001) values flood protection by tropical forests in Cameroon at US$24 per hectare per year. Van Beukering *et al*. (2003) estimate the NPV of water supply from the Leuser Ecosystem (comprising approximately 25,000 km^2 of tropical forest) at US$2.42 billion.
Groundwater recharge	Kaiser and Roumasset (2002) value the indirect watershed benefits of the 40,000 hectare Ko'olau watershed, in Hawaii, at US$1.42-2.63 billion.
Pollination	Priess *et al*. (2007) value pollination services provided by forests in Sulawesi, Indonesia, at 46 Euros per hectare. Ongoing forest conversion is expected to reduce pollination services and thus coffee yields by up to 18% and net revenues per hectare by up to 14% over the next two decades.
Existence values	Horton *et al*. (2003) use contingent valuation to estimate the willingness to pay of UK and Italian households for protected areas in the Brazilian Amazon at US$46 per hectare per year. Mallawaarachchi *et al*. (2001) use choice modelling to value natural forests in the Herbert River District of North Queensland at AU$18 per hectare per year.

"We cannot manage what we do not measure and we are not measuring either the value of nature's benefits or the costs of their loss."

Pavan Suhkdev
TEEB 2010

REDD+: Reducing Emissions from Deforestation and forest Degradation (REDD+) also promotes the enhancement of forest carbon stocks. The scheme aims to create a financial value for the carbon stored in and sequestered by forests, offering incentives for developing countries to:
1) Reduce emissions from forested lands, and
2) Invest in low-carbon paths to sustainable development.

PAYMENTS FOR ENVIRONMENTAL SERVICES (PES) AND REDD+: Payments for environmental services or PES schemes have emerged as the most high-profile mechanism for conserving forests. Local, national and global in scope, PES remunerates landowners for conserving their forests.

There are some well-known examples of PES success. In New York, for instance, a need to improve water quality turned into financial incentives for farmers and forest land owners to conserve forest while adopting environmentally-friendly agricultural measures.

REDD+ involves transfers of finance between industrialized and developing countries in exchange for emission reductions, and further transfers at the national level to forest landowners and communities (Angelsen *et al* 2008).

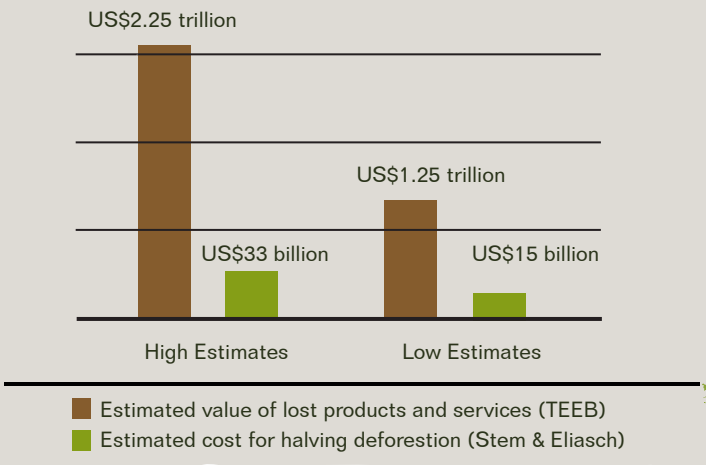
UNEP and the UN-REDD Programme see REDD+ as a catalyst to unlocking the true value of forests as a viable large-scale first investment into ecosystem services. One example: Norway is granting US$1 billion to Indonesia in return for agreeing to tackle its issues surrounding clearing of natural forests and peatlands (TEEB 2010).

REFORESTATION: Reforestation can provide a high return in terms of public savings. The Loess Plateau Watershed Project in China has transformed a totally barren environment of 35,000 square kilometers, approximately the size of Belgium. The ecosystem is now recovering dramatically with abundant vegetation cover and natural water infiltration. Poverty in the area has been alleviated; soil fertility is on the rise; the sequestration of carbon is increasing; biomass is gaining; and water retention is being restored as a result of the now vegetated, recovering soils (**www.eempc.org/**).

"REDD+ necessitates an ambitious agenda. We collectively need to reform policies, build institutions, and launch demonstration activities…we learned that a successful REDD+ effort depends on new partnerships in this increasingly dynamic and multi-polar world. Governments must work with civil society, indigenous groups and the private sector."

Robert Zoellick
2010

Order of magnitude on investment returns from addressing deforestation and forest degradation



ECOTOURISM: The rate of growth in the tourism sector is massive. In 2008, 922 million international tourists were recorded vs. 534 million in 1995 (UNWTO, 2009). In 2008, earnings from tourism reached US$944 billion. And with 40% of these journeys taking place in a developing country, experiencing biodiversity, landscapes and wildlife are now key attractions for a growing number of tourists.

AGROFORESTRY SYSTEMS: Reforestation and regeneration need not be at the expense of agriculture. Agroforestry – a mixture of trees, crops and livestock – can enhance timber and agricultural production. Alongside crops, the delivery of ecosystem services can actually grow, thereby enhancing opportunities for food, health and livelihoods for rural communities. With heightened productivity as a result of reforestation and afforestation, the demand for crops can be contained in smaller parcels of land, with less intensive inputs, for example, fertilizers, resulting in less pressure on natural forests and a diversification of on-farm income sources. Agroforestry also augments preventative measures against climate change, pests and disease.

PHARMACEUTICALS: Global sales of pharmaceuticals based on materials from natural origin are worth US$75 billion/year (Kaimowitz 2005; TEEB 2010), ranging from new medicines to high-end skin care lines.

Green investments in forests already demonstrates terrific economic returns. The Global Forest Trade Network, which promotes improvements in forest management, brings together more than 370 companies representing 18% of global trade in forest products at a combined annual rate of US$68 billion **(http://gftn.lpanda.org/resources/factsheets/?150322/GFTN-Factsheet).**

CALL TO ACTION

Long-Term Forest Recovery

Governments and partners have an opportunity to optimize the recovery, value and contribution of forests by:

- Building our knowledge of ecosystem services and products;
- Emphasizing the benefits of financial, environmental and social contributions to all parties;
- Using this knowledge, along with public/private investment and financial incentives, to develop markets for ecosystem services and low-carbon goods;
- Balancing the demand for these goods with community needs (for example, securing the rights to forest resources for indigenous peoples);
- Rendering sustainable forest management a financially worthwhile option and creating subsidies and other fiscal incentives to reward good practices;
- Employing market measures, for example, certification and requirements on legality;
- Strengthening law enforcement; and
- Enrolling a growing participation of governments, institutions, communities, donors, the media and individuals in unlocking the optimal contribution by forests to green growth.

Effective, efficient and equitable results are within reach. And the media can add great value to this argument, urging governments to protect and incorporate the multiple benefits of forests in their decision making; rendering this process transparent; bringing forth information that is within the best interests of readers, listeners and viewers; and stimulating informed public debate.

UNEP'S FOREST STRATEGY: The scale of the transformation to a Green Economy is enormous, beyond any individual organization. Forest-based green growth will require large-scale partnerships and investments. UNEP, as part of this developing partnership, has identified in its Forest Strategy the key areas of support to drive the agenda onwards, focusing on:

- Catalyzing the discussion on the role of forests in national development and forest-based green growth;
- Generating and managing knowledge around a functioning forest ecosystem (for example, the role of forests in national development);
- Supporting the application of an ecosystem management approach to forests, including safeguards and alignment of policies; and
- Encouraging local and regional action plans on conserving forest and promoting green investments.

Please refer to **www.unep.org/forests** for more information.

"Environment and biodiversity are no longer subjects for conservationists and scientists only. They have to be treated by politicians with as much attention as an economic crisis or upcoming elections."

Yolanda Kakabadse
WWF

SIZE OF THE CHALLENGE

The United Kingdom government-sponsored reviews have estimated that investments of US$13-33 billion will be needed every year to halve greenhouse gas emissions from forests by 2030. Can money on this scale be raised without taking it from aid allocations? Can political economies around big business such as illegal logging, estimated at up to US$15 billion/year, be effectively regulated? Can relatively powerless and badly-resourced government departments in developing countries handle such large amounts of money? The most serious deforestation occurs in areas where land-use rules are weak and poorly enforced. Injections of money into such areas could exacerbate corruption, exploitation and lawlessness.

FLEGT AND FOREST CERTIFICATION REVIEW: Forest Law Enforcement, Governance and Trade (FLEGT) and forest certification are measures that 1) exclude illegal timber from the marketplace, and 2) move towards supplying products from well-managed forests. Both the US and EU have put in place legislation to ensure that import and sale of illegally-harvested wood is banned within the respective areas. These measures include chain-of-custody certification and wood-tracking systems.

FORESTS DEFINED: There are many definitions of a forest (for example, natural forests and forest plantations) based on various criteria. The term commonly applies to land with a tree canopy cover of more than 10% and area of more than 0.5 hectares. Forests are determined both by the presence of trees and the absence of other predominant land uses. The trees should be able to reach a minimum height of five meters.

Young saplings that have not yet but are expected to reach a crown density of 10% and tree height of five meters are included under forest, as are temporarily unstocked areas. The term includes forests used for purposes of production, protection, multiple-use or conservation
(for example, forest in national parks, nature reserves and other protected areas), as well as saplings on agricultural lands (for example, windbreakers and shelterbelts).

Forests exclude stands of trees established primarily for agricultural production, for example, fruit tree plantations. It also excludes trees planted in agroforestry systems.

KEY QUESTIONS TO ASK ABOUT FORESTS

Forests and Development

- What are the effects of deforestation and forest degradation on local livelihoods and businesses?
- What is the political economy behind poor forest management and the loss of ecosystem services?

Forest Management

- Who benefits from the current deforestation trends?
- What's the best way to motivate sustainable forest management?
- Where can the necessary (and adequate) resources for enforcement and management be found?

Business Opportunities

- What business opportunities does sustainable forest management provide?
- What are the economics around broad-based sustainable forest management?

Forest-Dependent People

- How many people depend on forests within your area?
- What are the roles of forests in our daily lives?

Citation

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Included here is a DVD of a short animated film, BRANCHING OUT FOR A GREEN ECONOMY. It highlights the role forests can play in national development, a Green Economy and climate change. The film also reviews the impact of forests on business as usual and on transformative solutions.
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UNEP has started a dialogue with countries, communities, businesses and development partners to take a greater interest in the role of forests in sustainable development and a Green Economy.

REPORTING FORESTS provides journalists with insights on the impact of losing forests, and what can be done to transition successfully to forest-based green growth.

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To find out how to support forests, visit

www.unep.org/forests

or email us at forest@unep.org