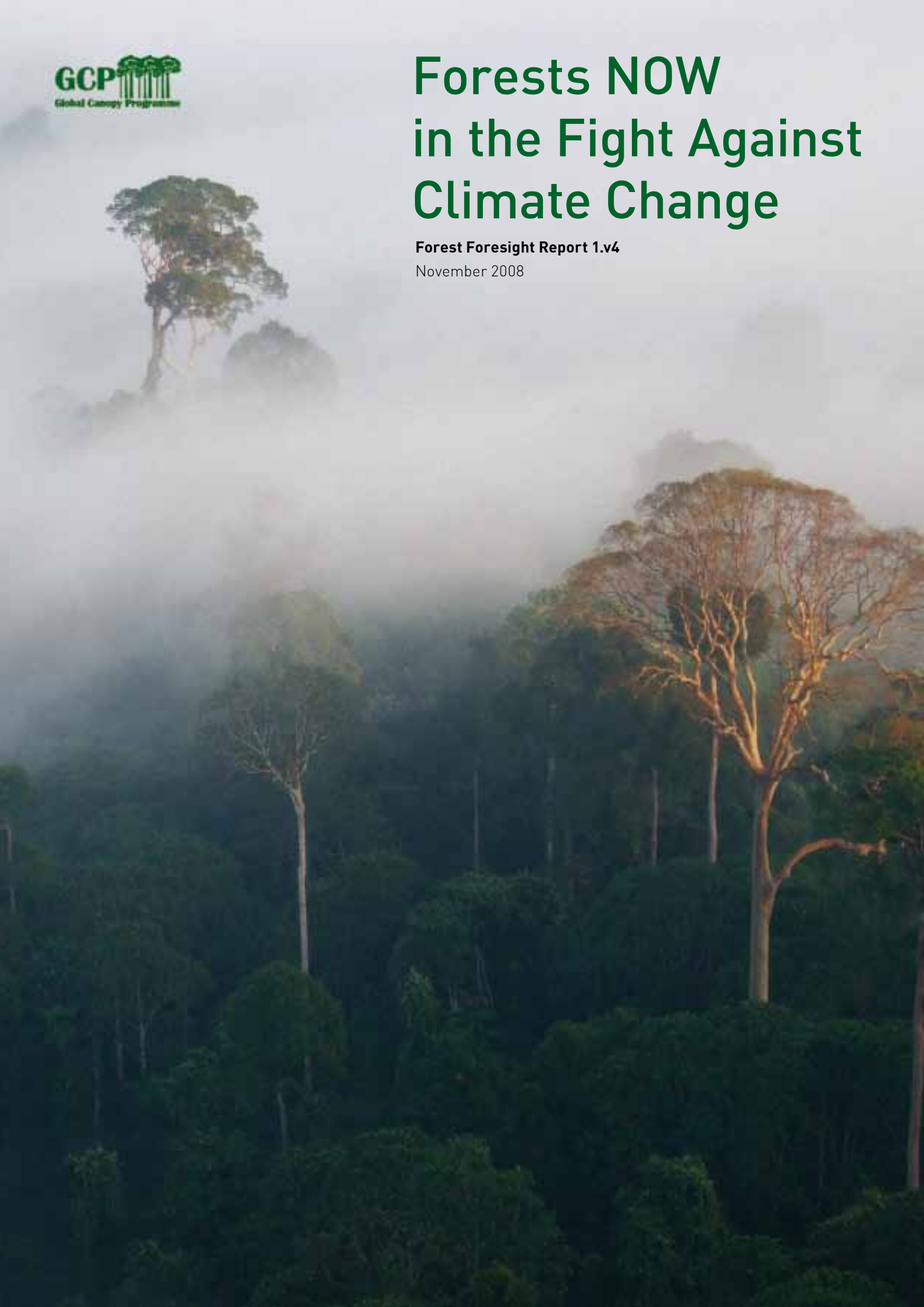




# Forests NOW in the Fight Against Climate Change

**Forest Foresight Report 1.v4**

November 2008



This Report is intended as a guide for non-specialist stakeholders addressing deforestation and climate change within Governments, the private sector, and the media. This is the fourth edition of this report, originally published in May 2007. This updated edition summarises scientific knowledge of the world's tropical forests, the full range of ecosystem services they provide to humanity, and their critical role in maintaining a stable climate, as well as detailing potential solutions to reduce deforestation.

The Global Canopy Programme (GCP) is an alliance of 37 scientific institutions in 19 countries, which lead the world in research, education and conservation in forest canopies. Our work programmes aim to define and explore the economic value of forest ecosystem services and their role in mitigating climate change. We share these findings with politicians, policy makers, and financiers around the world so that they can be applied in efforts to halt global warming. As deforestation proceeds apace, sustainable development policies and positive incentive mechanisms based on sound science must urgently be developed to preserve tropical forests, which act as vital utilities for humanity.

Forests NOW is an independent global network of governments, organisations, and individuals concerned with forests and climate change, which is co-ordinated by the Global Canopy Programme.

#### Acknowledgements

The GCP would like to pay tribute to the outstanding contributions of many scientists and field researchers in our Alliance whose investigation of the interactions between tropical forests and the atmosphere, often in dangerous circumstances high in the canopy, is the basis of our knowledge of the correlation between deforestation and climate change. In particular the work of Dr. Antonio Nobre of the Brazilian Institute of Research in the Amazon (INPA) has provided enormous insight and encouragement.

This report has been produced with the generous support of the European Climate Foundation and the Rufford Maurice Laing Foundation.

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LIVING CARBON

© James Aldred



DEAD CARBON

© Julio Etchart - www.julioetchart.com

We cannot avoid dangerous global warming without action on deforestation, which causes around 20% of all carbon emissions – more than the entire global transport sector.

Despite this evidence, 13 million hectares of tropical forests continue to be destroyed each year. 5.5 million hectares are in rainforests – an area nearly twice the size of Belgium.

International demand for products like beef, coffee, soy, palm oil, and timber drives deforestation worldwide.

Most forest-owning nations have few development options other than converting their trees into commodities to achieve poverty reduction and prosperity.

Bringing forests into all climate change mitigation frameworks – harnessing funds from donors, taxes, and carbon markets – could provide the economic incentives to halt this process.

Protecting the world's forests is not just about reducing CO<sub>2</sub> emissions. Forests act as giant global utilities, supplying humanity with vital ecosystem services such as generating rainfall, moderating extreme weather, and maintaining biodiversity. These services should be valued too.

1.4 billion of the world's poorest people depend on forests for their survival. So do we. Without tropical forests, we will not end poverty or achieve environmental sustainability – jeopardising these key Millennium Development Goals.

As the international community moves towards a new global deal on climate change, developing nations and their forests cannot be left on the sidelines.

**If we lose forests, we lose the fight against climate change: we must act on Forests NOW.**

# The World's Tropical Forests



Almir Surui  
Chief  
Surui Indigenous Community  
Brazil

“Each one of us has to make a contribution arising from our conscience: to improve, not to destroy, the forest. Starting from the recognition of the value of biodiversity to human life. Whatever can be done in its favour, in defence of the forest, will be welcome by us indigenous peoples.”



Wangari Maathai  
Nobel Peace Prize Laureate  
Founder of the Green  
Belt Movement  
Kenya

“We need a mechanism that will assist people in developing countries, certainly in Africa, to protect their standing forests and plant trees, to protect their soil, protect biodiversity and protect livelihoods while reducing carbon emissions for everyone.”



Sir Michael Somare  
Prime Minister  
Papua New Guinea

“Our forests give us life – our culture, our food, our shelter, our medicine, our fuel ... We believe carbon markets must be reframed to support forests and their communities. Together, we must find innovative ways to protect our forests now.”

# Are we Creating Wealth that's Worth Having?

## A personal viewpoint

Some time ago, Ben and Jerry's invented a delicious ice cream called Rainforest Crunch. Here's how we may be heading for one. In global markets today, rainforests are worth more dead than alive. Governments with few other assets offer up their rainforests to raise revenue. The only way they can do this is to convert rainforests into a commodity - usually timber, beef, soy or palm oil - to satisfy the voracious appetites of Western consumers and, more recently, of prosperous Asians. Most deforestation is driven by enterprise and funded by hedge funds, pension funds, and other sources of liquidity obtained in capitals far from - and blind to - the forests they are destroying. Billions of dollars end up on investors' balance sheets, but billions of tonnes of carbon dioxide go up in smoke from the trees burned in the process - and the risk to everyone is building up to a climate crisis.

If we hope to avert a climate catastrophe - by keeping average global temperatures from rising another two degrees by 2050 - we cannot go on with 'business as usual'. Releasing about six billion tonnes of CO<sub>2</sub> annually, deforestation causes more emissions than the entire world's transport sector. Just one day of tropical forest emissions is equivalent to 12.5 million people flying from London to New York.

For decades, the CO<sub>2</sub> emissions caused by deforestation were the elephant in the living room of climate change - a huge problem that was largely ignored in a debate dominated by the energy and transport sectors. Thankfully, that has changed. At the United Nations, a mechanism is being negotiated for Reducing Emissions from Deforestation and Degradation (REDD) in developing countries. Both the United States and the European Union have also made clear their intention to prioritise tropical deforestation in emerging legislation.

But as politicians grapple with climate change and the credit crunch, they are no longer sure what is valuable or how to safeguard our values. Powerful banking institutions have been felled as swiftly as a chainsaw rips through giant trees in tropical forests. Assets that investors thought were safe as houses have turned out to be nothing more than beautifully packaged bad debts, enabling bankers to pocket billions while deluding even themselves that the contents were of real value.

A wine broker said to me recently: "The thing about investing in a first growth is that the more the world drinks a good vintage, the more valuable it gets." So, could disappearing forests one day be a safer investment than houses; an ancient mahogany equivalent to a fine Margaux, a rainforest reserve more valuable than a Rothschild vineyard? It all depends on how we value natural capital, which until now has not appeared on company balance sheets. The current financial crisis may

force the global community to right that wrong - along with many others - because we all want a more stable economy. It will force politicians, businesses and each of us to ask: "Are we creating wealth that's worth having?"

One of the reasons why our global economy has failed is because bankers, not being biologists, find it hard to accept that all business is a wholly owned subsidiary of the environment. Investors and speculators plunder natural capital because it's free and no regulator insists they should pay for the associated costs of their actions - costs which are ultimately passed on to all of us. The result is rising global temperatures and declining natural capital.

Pavan Sukhdev's landmark report 'The Economics of Ecosystems and Biodiversity', published by the European Union in May 2008, estimated that annual losses of natural capital are worth between €1.3 and €3.1 trillion per year - equivalent to the capitalisation of the entire Indian or UK stock markets. If biodiversity is so valuable to human health and welfare, why do we persist in destroying it? We can no longer blame ignorance; the fact is that the current global economic model is no longer sustainable, given the increasingly fragile environment on which it depends. A new development model is needed: one that includes financial, human and natural capital on the balance sheet.

The fundamental problem is that nature is, quite literally, priceless. The services humanity derives from nature have no economic value. With energy, food and environmental security heading on a dangerous collision course, markets need to rapidly assess and manage the risks of continuing to exploit natural capital as if it were a free ride. Investing in natural capital may in time be as safe as any other public utility, but that will require an 'ecosystem services market' with an environmentally focussed financial regulator that forces us to value the global public goods that we continue to plunder at our peril.

The carbon market is such an invention: it values a commodity we cannot see, smell or touch, but which is poisoning our world. The Kyoto Protocol jump-started the global carbon market, which may soon exceed \$100 billion per year. Markets are by no means perfect, but they are inventive. Who would have believed 30 years ago that a bottle of fashionable mineral water would sell for more than petrol? Left to its own devices, the global market puts a value of €70 billion per year on bottled water, but no value at all on the vital rain produced by the world's rainforests. Including forest ecosystem services in global markets could deliver essential funds to protect them, in addition to those provided by carbon markets.

Some people understandably fear turning natural capital



into bonds or equities, because markets are volatile instruments, susceptible to greed and exploitation; but Government funds alone sourced from taxation are unlikely to meet the Eliasch Review's estimated \$17-33 billion annual bill needed to halve emissions from the forest sector through the carbon market by 2030. Some industrialised nations are investing in nuclear and carbon capture power stations to reduce their own emissions, but these technologies will take decades to have any significant impact on reducing emissions, whereas we can tackle deforestation now. Tropical and temperate forests absorb around a tonne of CO<sub>2</sub> per hectare per year from our atmosphere. Ancient tropical forests alone could be sequestering €1 billion worth of CO<sub>2</sub> per year for free. We may not stop ice caps melting inside a century, but with political will and adequate funding, we could slow and even halt deforestation within a decade.

Protecting tropical forests is not just about carbon. The world's rainforests are home to half of life on earth. They also act as giant 'eco-utilities', generating rainfall, moderating extreme weather, and air-conditioning the atmosphere on a global scale. The Amazon's trees release 20 billion tonnes of water into the atmosphere each day, which waters agribusiness and underpins energy security from hydro-power to biofuels across Latin America. Were it possible to build a machine to do this, every day it would consume the energy equivalent to 80,000 coal-fired power stations. The Amazon does this for free! Now that's natural capital at work - but we are eroding it fast.

Putting a financial value on the natural capital in forests

would also help alleviate poverty among the 1.4 billion people who depend directly or indirectly on these forests for their livelihoods and food security. In the past, indigenous communities have often paid with their lives to protect their forests. Their ownership rights need to be legally recognised so they can monitor, defend, and benefit from forest ecosystem services in the future. Poor extractivist communities also deserve a more secure livelihood from their forests. 25-30 million people live in the Amazon basin. They do not cut down trees for logging or farming because they are ill-informed, but because it is a rational way to feed their families. It is time for Governments and the private sector to make it more worthwhile for forest communities to keep their trees standing than to cut them down.

Rich nations that have caused climate change, and have the financial muscle to help solve it, must start to recognise that 'real capitalism' includes not only financial and human capital, but also natural capital. Governments should act now to create funds, build capacity, and test new mechanisms, but also prepare the ground for policy solutions commensurate with the scale of the problem, linked to or fully included in markets. If we can create an incentive to trade carbon, a public poison, then surely we can invent one to protect a public good. If one day forests could be safer than houses, that would be wealth worth having.

Andrew Mitchell  
Founder and Director, Global Canopy Programme

16 million tonnes of CO<sub>2</sub> enter the atmosphere from deforestation every day.

## Tropical Forests and Climate Change

### Deforestation is the second largest cause of global greenhouse gas emissions

- Around 18% of global greenhouse gas (GHG) emissions are from tropical deforestation; another 2% are from other land use sources.<sup>1</sup> Aircraft emissions are currently just 2-3% of global GHG emissions.<sup>1</sup>
- Every year, 130,000 km<sup>2</sup> of forests (an area the size of England) are destroyed.<sup>2</sup>
- Current annual emissions from deforestation are comparable to the total annual CO<sub>2</sub> emissions of the US or China.<sup>3</sup>
- Unless mitigated, these carbon emissions will negate most of the CO<sub>2</sub> savings planned under the first commitment period of the Kyoto Protocol.
- Total emissions from deforestation in 2008-2012 are expected to equal 40 billion tonnes of CO<sub>2</sub>, which could raise atmospheric levels of CO<sub>2</sub> by ~2 parts per million (ppm).<sup>1</sup>
- If unchecked, the cost of climate change caused by deforestation could reach \$1 trillion a year by 2100.<sup>3</sup>

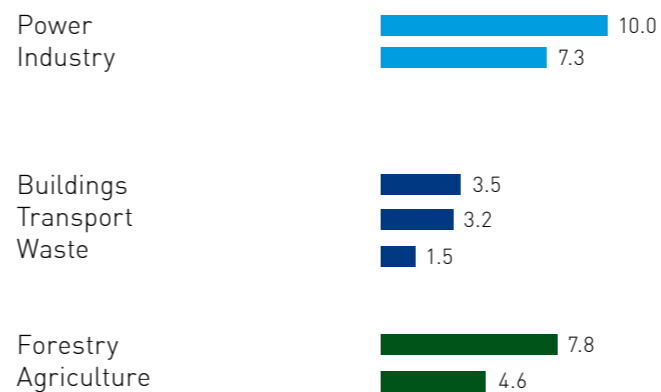
**“Stopping forest emissions is a rare case of a triple-win: you gain the forest services, you promote the forest economy, and you help limit climate change.”**  
**Roberto Smeraldi, Director**  
**Amigos da Terra - Amazônia Brasileira, Brazil**

### Tropical forests and peatlands store vast quantities of carbon

- Tropical forests cover 19 million km<sup>2</sup> of the planet and store a quarter of the carbon on land.<sup>4</sup> Tropical forests store 120-400 tonnes of carbon/ hectare.<sup>5</sup>
- Peatlands cover just 3% of the world’s land area, yet are the largest terrestrial store of biomass carbon.<sup>6</sup> Due to the depth of peat, one hectare of tropical peat forest can store 3000-6000 tonnes carbon/hectare.
- When peatlands are drained, cleared and burned for agriculture, there are two sources of emissions: one from peat oxidation, the second from fire. SE Asian peatlands (which cover just 0.2% of the world’s land surface) are responsible for an estimated 2 billion tonnes of CO<sub>2</sub> emissions each year.<sup>6</sup> 75% of this comes from Indonesia alone. Preventing this would be equivalent to reducing emissions from global fossil fuels by 8%.
- Economic losses in SE Asia (closed offices, airports, and health problems) from smoke and haze in the 1997/8 Indonesian peat fires amounted to \$4.5-6.3 billion.<sup>7,8,9</sup>

### Abatement Potential by 2030

Abatement potential for greenhouse gases by sector, gigaton of carbon dioxide equivalent per year by 2030 (costing up to €60 per tCO<sub>2</sub>e)



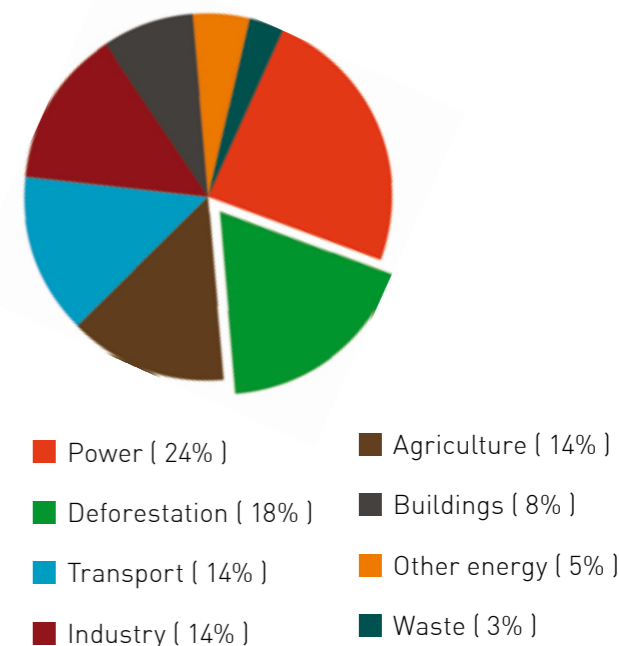
From: 'Pathways to a Low-Carbon Economy. Version 2 of the Global Greenhouse Gas Abatement Cost Curve', 2009

### Protecting forests reduces CO<sub>2</sub> emissions cost-effectively and quickly

- Historically, developing countries cannot be held accountable for causing climate change, but now their forests offer one of the cheapest, most efficient, and immediate solutions to the world’s rapidly rising carbon emissions, as the Stern, McKinsey and International Panel on Climate Change (IPCC) reports have all shown.
- The 2008 Eliasch Review<sup>3</sup> states that the net benefits of halving deforestation could amount to \$3.7 trillion over the long term.
- McKinsey<sup>10</sup> has estimated the cost of alternative strategies to maintain global temperatures at safe levels at no more than €60 per per tCO<sub>2</sub>e. Terrestrial carbon would account for around a quarter of all actions needed, around 40% of this comes from avoided deforestation, 20% from afforestation and reforestation and the remaining 40% from agricultural improvements..
- The IPCC<sup>11</sup> estimates that 65% of the total mitigation potential of the forest sector is located in the tropics. About 50% of this could be achieved by reducing deforestation.

- While energy efficiency measures can be quick wins against climate change, more costly and complex mitigation technologies such as carbon capture and nuclear power will have little effect on significantly reducing GHG emissions in the short term. Forest action requires almost no new technology and can begin immediately, at lower cost.

### GHG emissions in 2000 by source



From 'Stern Review on the Economics of Climate Change', Cambridge University Press, 2006. In the rest of this report, the IPCC’s estimate of deforestation as 20% of global emissions has been adopted.

# Deforestation: Global Demand versus International Regulation

## Global demand

- Deforestation is largely caused by land clearance to accommodate industrial-scale agribusiness, driven by global demand for cheap palm oil (86% of world supply comes from Indonesia and Malaysia<sup>12</sup>), beef and soya (34% of Brazil's beef exports are to Europe,<sup>13</sup> and China's demand for soya to feed chickens and pigs has skyrocketed).
- Biofuels could release far greater emissions than they are designed to save by stimulating the clearance of rainforests. Palm oil grown on cleared peatlands has a life cycle emission of up to 25 tonnes of CO<sub>2</sub> per tonne of biofuel – five times more than diesel.<sup>14</sup>
- The emissions associated with deforestation are often embedded in imports of agricultural products from rainforest nations to highly developed countries. The UK Government Department for Environment Food and Rural Affairs (DEFRA) recently released a report showing that the UK had reduced territorial CO<sub>2</sub> emissions by around 5% in 1992-2004. However, over the same period, overall CO<sub>2</sub> emissions associated with UK consumption of goods and services increased by nearly 18%. The EU's forest emissions footprint extends far beyond its borders.
- 80-90% of timber extraction is illegal under the existing laws of Brazil and Indonesia<sup>5</sup>, the biggest GHG emitters from deforestation. Greater political will and resources to enforce existing legislation are necessary. According to WWF,<sup>15</sup> up to 28% of the EU's timber imports could be illegal. The UK is the EU's largest importer of illegal timber. China has protected its forests, but its increasing demand for timber drives deforestation elsewhere.

Drained, denuded peat forest is cleared to make way for plantations near Riau, Sumatra.



## International regulation

- In December 2007, the UN agreed in principle to introduce a mechanism for Reducing Emissions from Deforestation and Degradation (REDD+) in developing countries under its Convention on Climate Change. If negotiations are successful, a REDD+ framework will be agreed in December 2009 in Copenhagen, and ratified as part of Kyoto II in 2012. This could generate billions for forest-owning nations to reduce deforestation. In his latest report,<sup>16</sup> Lord Stern concludes that REDD+ is key to a new global deal on climate change.
- The European Union Emissions Trading Scheme (EU-ETS) currently excludes trading of any emissions reductions from the forestry sector. Following two votes in the European Parliament in late 2008, there are now proposed amendments to include forest credits in the EU-ETS from 2013, alongside funds raised from the auctioning of a percentage of emissions permits. The emerging US legislation also includes provisions for forest offsets and a set aside of allowances for REDD+.
- Climate stabilisation cannot be achieved without significant private sector investment in tropical and sub-tropical forestry.<sup>17</sup> The Clean Development Mechanism (CDM) of the Kyoto Protocol, which included incentives for carbon sequestration through afforestation and reforestation activities, has been largely ineffective. A combination of the overly bureaucratic certification rules and the lack of demand from the EU means that to date only eight forestry projects have been registered, compared to nearly 1900 approved CDM projects<sup>18</sup>. Less than 1% of carbon market investments have been in reforestation projects. To encourage greater investment, the rules for the CDM need to be simplified and the EU and US need to signal a strong demand for emissions reductions from forests.

“...if properly designed, inclusion of the forest sector in the EU Emission Trading Scheme should have little or no impact on the EU carbon market price. This would maintain incentives for EU investment in clean technologies.”  
Eliasch Review on Climate Change: Financing Global Forests

# Ecosystem Services: Beyond Carbon

Forests act as giant utilities providing vital 'ecosystem services' to the world. Apart from carbon storage and sequestration, these services include water storage, rainfall generation, climate buffering, biodiversity maintenance, and soil stabilisation. Although we all benefit from these services, nobody pays for them. Recent estimates suggest that the loss of ecosystem services from deforestation is costing between €1.3 and €3.1 trillion per year.<sup>19</sup> In the future, paying for ecosystem services should be as normal as paying your electricity bill.

## Climate regulation

Ancient forests are a carbon sink – actively sequestering carbon from the atmosphere. Old growth tropical forests are estimated to absorb  $-4.4 \pm 1.5$  billion tonnes of CO<sub>2</sub> per year, equivalent to 15% of annual GHG emissions.<sup>20</sup> Deforestation therefore not only releases stored carbon, but reduces this carbon sink.

## Biodiversity maintenance

Tropical forests sustain half of all life on earth (about 6 million species).<sup>21</sup> All subsequent ecosystem services are a function of interactions between this life, the soil and the atmosphere.

Forest biodiversity also supports local food security and livelihoods. The total value of international trade in non-timber forest products (NTFPs) is \$7.5-9 billion per year - over three times the GDP of Guyana or Belize.<sup>22</sup> Processed medicines and medicinal plants from forests are worth another estimated \$108 billion - roughly equivalent to the GDP of New Zealand.<sup>22</sup>

## Air conditioning

Trees act as air conditioners, cooling the atmosphere near the ground through evapo-transpiration.<sup>4</sup> One square metre of the ocean's surface evaporates one litre of water; trees release 8-10 times more moisture into the atmosphere. The Amazon's trees release 20 billion tonnes of water into the atmosphere each day. The energy used by this process is equivalent to 80,000 power stations.<sup>23</sup>

## Rainfall generation

Complex chemistry (Volatile Organic Compounds) released by tropical canopies into the atmosphere is thought to help generate the rainfall that stabilises local and regional weather patterns.<sup>24</sup> NASA's TRMM satellite data show that Brazil's billion dollar soya, beef and biofuel industries all benefit from rain generated by Amazonian forests, which store 3 trillion tonnes of water.<sup>23</sup> 70% of Brazil's electricity is sourced by hydropower, also dependent on Amazonia's rain. Coastal tropical forests may act as a 'biotic-pump', drawing water

from the sea inland. Coastal deforestation breaks this cycle and may lead to drying inland.<sup>25</sup>

## Soil stabilisation

The tree root mats beneath tropical forests play a crucial role in holding together the substrate upon which they grow. A century ago, 35% of Ethiopia was covered in forest. By 2000, this had declined to 4.2%, resulting in desertification, which has contributed to decades of famine.<sup>26</sup>

## Health

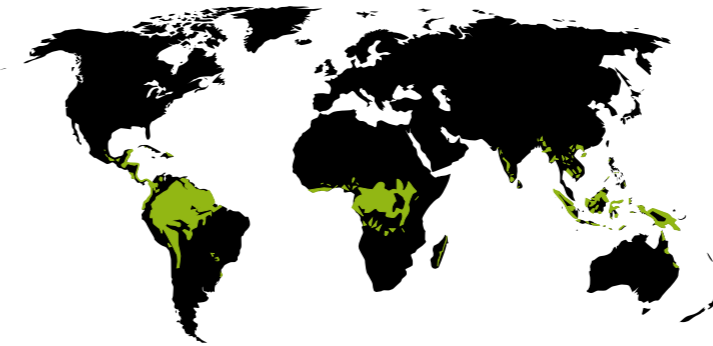
Undisturbed tropical forests can have a moderating effect on infectious disease. 40% of the world's population lives in malaria infested regions. Heavily deforested areas can see a 300-fold increase in the risk of malaria infection compared to areas of intact forest.<sup>27</sup>

**If deforestation is not curbed, there will be severe impacts on food, energy, and environmental security.**

# The ABC of Tropical Forests

There are 42 million km<sup>2</sup> of forests worldwide, covering nearly one third of the planet's land surface.<sup>4</sup> Tropical forests, which account for 28% of the world's forests, are unevenly distributed around the world. The largest unbroken stretch of tropical rainforest is in the Amazon River Basin of South America, which extends over nine countries. Over half lies in Brazil, home to about one-third of the world's remaining tropical rainforests. The Congo Basin's forests extend over six countries and account for approximately 20%.<sup>28</sup> Indonesia's forests account for 10%.<sup>29</sup> The remaining tropical rainforests are mainly in South East Asia.

Despite their relatively small area, these forests play a crucial role in the maintenance of the world's environment. The following short case studies from the world's main tropical forest regions – the 'ABC of Forests' (SE Asia, Brazil, and Congo) – outline the specific threats they face and the potential consequences for the world's life, atmosphere and people.





# South East Asia

Forests in the SE Asian countries of Malaysia, Indonesia and Papua New Guinea cover some 150 million hectares. Around 264 million people live in the region, many of them depending on forested areas and living in relative poverty. Indonesia's forests alone provide a livelihood for about 30 million indigenous people.

Total conversion of this forest into agricultural land, plantations and other non-forest uses is predicted to occur before 2050.<sup>30</sup> Between 2000 and 2005, rates of annual forest loss in SE Asia ranged from 1.4% for Papua New Guinea<sup>31</sup> to 2% for Indonesia.<sup>32</sup>

Taking into account the 2 billion tonnes of annual CO<sub>2</sub> emissions from peatland drainage and degradation (including fires), Indonesia takes third place in global CO<sub>2</sub> emissions (approx. 350 million tonnes/yr<sup>1</sup>), behind the US and China. Indonesia is responsible for 12.8% of global rainforest clearing.<sup>33</sup>



Ebony leaf monkeys, found only in Indonesia, are threatened with extinction as their forest canopy habitat disappears.

## Major threats to SE Asian forests

The degradation of SE Asia's forests is driven by rapid population and economic growth, underpinned by the region's rich mineral, petroleum and forest resources, and the favourable conditions for high-yield crops such as oil palm, rubber and coffee.<sup>30</sup>

## Specific threats

- Industrial logging concessions, valued at around \$10.4 billion per year.<sup>32</sup> Industrial logging concessions cover half of Indonesia and Malaysia's forests, but less than 1% of these countries' forests are certified by the Forest Stewardship Council.<sup>2</sup>
- Illegal logging, especially in Indonesia, leading to an estimated \$4 billion<sup>34</sup> in lost Government revenues every year.
- Agriculture, predominantly oil palm and rubber, valued at approximately \$17.8 billion per year, which uses some 7.6 million hectares of land cover.<sup>29</sup>
- Burning and drainage of carbon-rich forested peatlands, particularly in Malaysia and Indonesia.
- Mining and petroleum, particularly in Papua New Guinea, where they contribute 25% of GDP annually.<sup>29</sup>

## Projected impacts of deforestation in SE Asia

### Rainfall generation

SE Asian forests exhibit larger rates of evapotranspiration than any other tropical forest,<sup>29</sup> however, the region's maritime climate and the influence of monsoon circulations make accurate predictions difficult. Although the effect of deforestation on



Around 264 million people live in the region, many of them depending on forested areas.

precipitation in SE Asia itself is small (an estimated 3%), it may have impacts on precipitation and weather patterns across Southern Europe, the Pacific Northwest of the US and Hawaii.<sup>35</sup>

### Carbon storage

In addition to the carbon stored in its forests, at least 42 billion tonnes of soil carbon are stored in the peatlands of SE Asia.

Peatlands are the most efficient terrestrial ecosystem for storing carbon; while they cover just 3% of the globe's surface, they store as much carbon as all global forest biomass.<sup>36</sup>

Peatlands in SE Asia cover a mere 0.2% of the globe's surface, but their degradation contributes ~90% of peat-related emissions – an estimated 8% of the global total.<sup>6</sup>

### Biodiversity

SE Asia is home to four of the world's 34 biodiversity hotspots. Indonesia and parts of Malaysia reach 60% endemism for plants and reptiles and 80% for amphibians; Papua New Guinea tops 80% endemism for mammals, reptiles and amphibians.<sup>37</sup> The tallest tropical trees in the world are in Borneo, reaching over 90 metres.

## What's happening now?

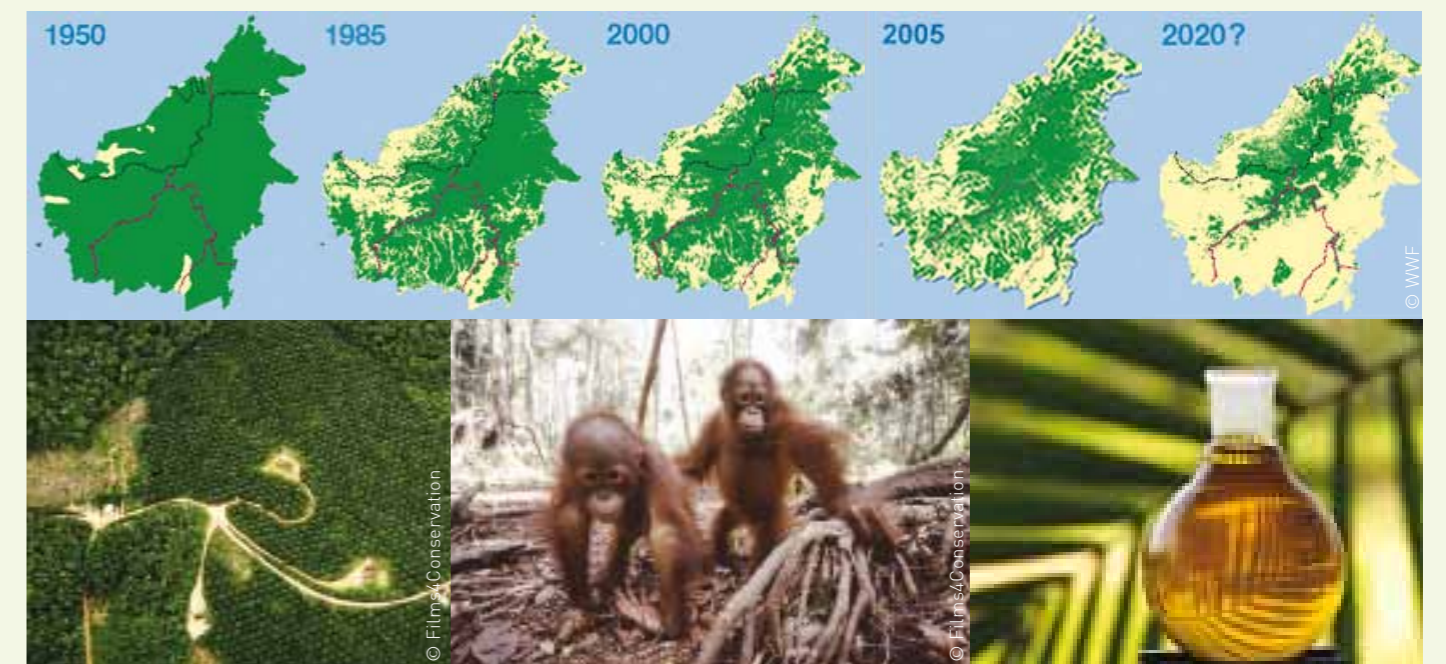
Papua New Guinea's call in the UN for payments to reduce deforestation in developing countries set the ball rolling in 2005. Indonesia hosted the UN's successful December 2007 Bali summit, but this focused global

attention on Indonesia's soaring emissions from deforestation. As a result, Indonesia set up the Forest 8 Group of the highest emitting countries to tackle deforestation. The 'Green Governors' of Indonesia's Aceh, Papua Barat, and Papua provinces have called for more Government action to curb deforestation. In 2007, together with the Governor of Brazil's Amazonas State, they pledged a moratorium on logging, representing around 200 million hectares of the world's remaining tropical rainforests.

Converting forests for palm oil has helped alleviate poverty in the region and with rising global demand shows little sign of abating. In 2008 Unilever, the biggest buyer in the region, pledged to make all its production of palm oil sustainable by 2015.

Following the tsunami in 2004, the Governor of Aceh in Sumatra, Indonesia pledged to restore destroyed lands and preserve the area's remaining forests. So far, 750,000 hectares of rainforest in Ulu Masen, Aceh have been allocated for the world's first commercially financed Avoided Deforestation project, co-financed by Merrill Lynch International and Carbon Conservation.

**"We're cutting down forests now to grow sugarcane and palm oil for biofuels and our forests are being hacked into by so many interests that it makes them more and more important to save now."**  
**Jane Goodall, Ph.D, DBE, Founder of The Jane Goodall Institute, UN Messenger of Peace**



Images top: Projected forest loss in Borneo between 1950-2020. Images below: Unsustainable oil palm production is the greatest threat to the survival of wild orangutans and other endangered species.

# Brazilian Amazon

Covering some 7 million km<sup>2</sup> across nine nations, the Amazon River basin is the largest and most diverse area of contiguous tropical forest on Earth, greater than the whole of Western Europe. Most of the forest lies in Brazil. Millions of hectares of the Brazilian Amazon are protected in reserves, including those gazetted for indigenous communities who have been very successful in defending their lands from large-scale conversion.

30 million people live in the Amazon basin.<sup>38</sup> The Brazilian Amazon is home to between 280,000 and 350,000 indigenous people, of which 180,000 live traditionally, heavily dependent on the ancient forest for their sustenance and spiritual and cultural life.<sup>38</sup> Improving their standard of living is a major priority for Brazil.

70% of Brazil's emissions are caused by deforestation, which accounts for nearly half of global rainforest clearing.<sup>33</sup> Between 1995 and 2005, South America lost an average 4.3 million ha per year to deforestation.<sup>32</sup> The legal Amazon lost about 2.2 million ha per year from 2000-2005. In recent years, Brazil has made great efforts to reduce deforestation; since the high of 2003, deforestation fell by 31% according to Government figures. The amount of deforestation declined to about 1.2 million ha in 2007.<sup>39</sup> However, soaring food prices (soya alone shot up 72%) created more demand for land, causing deforestation to increase again. The long-term picture is one of continuing deforestation. Half of the forest area of Amazonia may be cleared, logged or burned within 20 years.<sup>40</sup> Climate change may lead to rainfall reductions in eastern Amazonia, where deforestation is most intense; the interaction between these two forces may trigger further forest loss.<sup>41</sup>

At the same time, Brazil is an agricultural superpower and has become a world leader in renewable energy. In the last few years, Brazil has become the world's largest exporter of beef, chicken, sugar, coffee and orange juice. More than 70% of Brazil's electricity is sourced from hydro-electric power and 40% of its cars run on bio-ethanol. Brazil consumes and exports millions of tonnes of beef and soya and is likely to become an exporter of renewable fuels in the future. All of these are dependent to some extent on rain generated by the Amazon forest.



70% of Brazil's emissions are caused by deforestation.

## Major threats to Brazilian forests

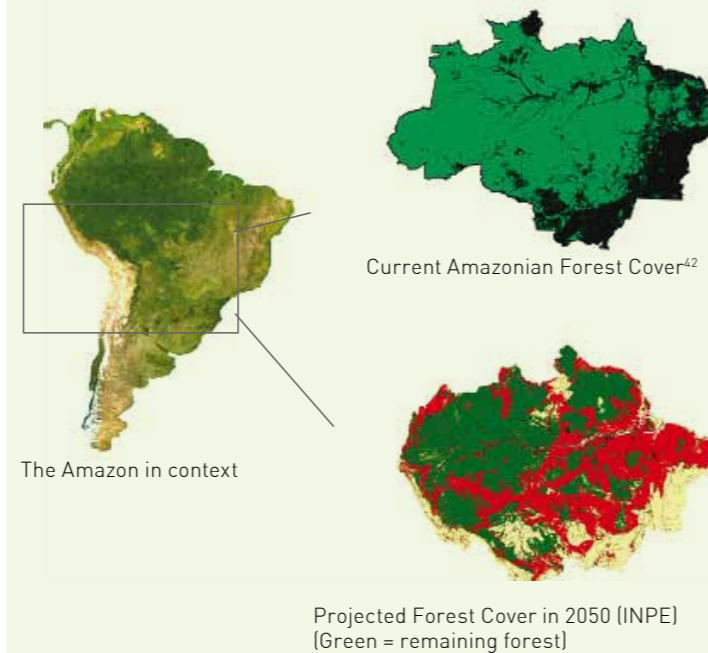
Industrial logging for timber, cattle pasture, and large-scale agriculture such as soya production are the main drivers of deforestation in Amazonia. Sugarcane for bioethanol is grown mainly in the SE of Brazil and does not yet threaten the Amazon forest.

Deforestation is profit-driven, but typically yields modest profits per hectare.<sup>42</sup> Because of the high costs associated with clearing the land, big businesses prefer to fell large tracts of forest. Data suggests that poor subsistence farmers, who cannot afford to clear more than 20 hectares a year, are responsible for less than a fifth of deforestation in Amazonia.<sup>42</sup> However, since much of the Amazonian forest grows on sand, agricultural productivity is short-lived and even small-scale agriculture must quickly shift to new areas, causing a domino-effect of deforestation.

Major road projects are providing conduits for development and opening up more forest each year for industrial farming, development and agriculture. It is expected that 2 million km<sup>2</sup> of rainforest could be cleared by 2050 under 'business-as-usual' development scenarios.<sup>43</sup> Much of this large-scale deforestation occurs on public land.<sup>42</sup>

## Specific threats

- Beef production. In 2002, pasture for cattle in Amazonia occupied around 50 million hectares.<sup>13</sup> Some 34% of Brazilian beef exports are to Europe.<sup>13</sup>
- Soya production. In 2002, soya production in Amazonia



occupied 4.9 million hectares.<sup>13</sup> Brazil now supplies some 34% of global soya exports.<sup>44</sup>

- Road expansion and urban development.
- Unsustainable and illegal timber extraction.
- Potential expansion of biofuel production.
- Mining, oil exploration and hydropower.

## Projected impacts of deforestation in Amazonia

### Rainfall generation

Brazilian Amazonia's trees release 20 billion tonnes of water into the atmosphere every day. Rainfall generated in Amazonia is carried south by a low-level jet stream,<sup>45</sup> watering Brazil's agribusinesses and metropolises, then reaching the Rio Plata basin, where 70% of the combined GDP of five countries (Argentina, Bolivia, Brazil, Paraguay and Uruguay) is created.<sup>46</sup> Models suggest that severe forest loss in Amazonia, alongside similar loss in the Congo basin, could lead to decreased rainfall in the Midwestern United States.<sup>29</sup>

### Carbon storage

Amazonas State alone contains 67 billion tonnes of carbon in its forests. To the south, the arc of deforestation in the States of Acre, Mato Grosso and Para is approaching rapidly. Estimated carbon emissions from Brazil's forests could be as high as 400 million tonnes per year.<sup>1</sup>

### Biodiversity

The Amazon is the most species-rich of all tropical rainforests, harbouring some 2.5 million insect species<sup>47</sup> and the world's greatest diversity of plant species.<sup>48</sup> This biodiversity is crucial to maintaining forest ecosystem

services in ways that are still not widely recognised. Research in Brazil and Germany shows that Volatile Organic Compounds (VOCs) produced by trees in the Amazon photo-oxidise in the air to create condensation nuclei that may stimulate rain.<sup>24</sup>

## What's happening now?

In August 2008, Brazil announced an international fund for the protection of the Amazon. The Government of Norway has pledged \$1 billion to the fund through 2015. Poor families in Brazil can apply for \$1,500 per year to restore and protect forest that they own.

Brazil has implemented the most sophisticated satellite monitoring system in the world to track deforestation and is cracking down on illegal activity. Environment Minister Carlos Minc has pledged to create an environmental police force with 3,000 armed officers to help combat illegal deforestation. However, the Governors of the Amazonian States have signed a joint communiqué calling for more action on deforestation by the Federal Government of Brazil. Amazonas State has created its own fund, managed by the Amazonas Foundation for Sustainability; a 'Bolsa Floresta' (forest bursary) is available to families who commit to zero deforestation, funded by Amazonas State and Bradesco Bank.

Rising commodity prices are an increasing threat to forests, yet Brazil's Government claims it can feed and fuel the world without cutting down a single tree, using millions of hectares of cleared but idle land for crops and biofuels.



A young rubber tapper at work in Acre State, Brazil.

# Congo Basin

Africa is home to 17% of the world's forests, but has already lost more than two-thirds of its original forest cover. However, because large-scale agro-industrial clearing has not yet begun in the Congo Basin, Africa contributes just 5.4% to estimated recent losses of tropical rainforest cover.<sup>33</sup>

At nearly 2 million km<sup>2</sup>, the Congo River Basin's dense tropical rainforest - stretching over six countries - is second in size only to the Amazon. It is the richest ecosystem on the continent, harbouring more than 50% of Africa's flora and fauna.<sup>28, 49</sup> The Congo Basin provides food, shelter and livelihoods for over 50 million people.

About 3,000 km<sup>2</sup> (< 1%) of central African forests are destroyed yearly due to the effects of poverty, population increase, illegal logging and conversion of forests for agriculture.<sup>33</sup> However, deforestation may intensify rapidly as the forests of the Congo Basin also harbour vast mineral wealth which has yet to be exploited.<sup>50</sup>

Unless current trends are halted, estimates suggest that by 2040 over two thirds of its forests will have been destroyed. This contiguous forested area could fragment into three separate blocks,<sup>50</sup> with devastating effects for the people who rely on these forests directly, as well as for biodiversity and for the ecosystem services the region provides to the world.<sup>50</sup>



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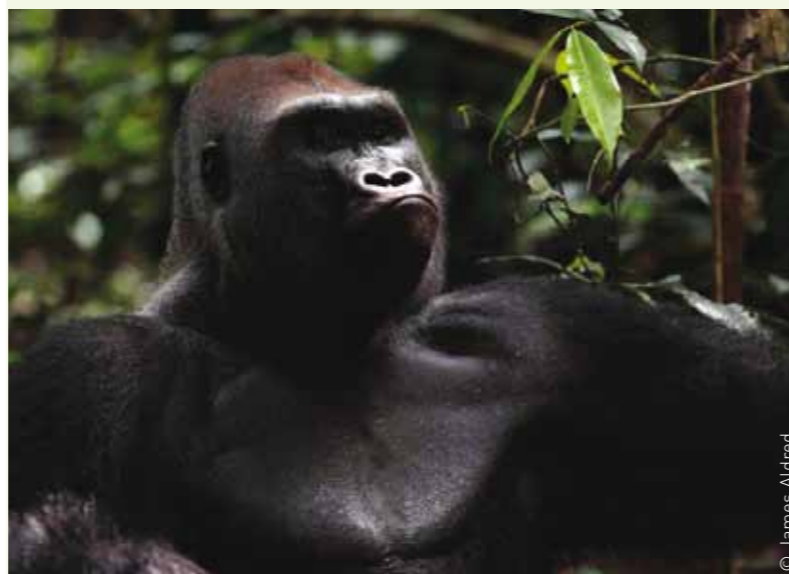
Forest communities in Cameroon pioneering new monitoring tools.

## Major threats to the Congo Basin forests

Currently more than 600,000 km<sup>2</sup> (30%) of forest are under logging concessions, whereas just 12% is protected.<sup>51</sup> Threats to these forests are complex and diverse, because of the different national and regional factors at play. A moratorium on new logging concessions in the Democratic Republic of Congo has been in place since 2002, but this has been repeatedly breached.<sup>52</sup> A new scramble for central African resources such as timber and minerals is exerting massive pressures to open up frontier areas. However, much of the current threat is from the poverty which drives people to cut down forests for land use and charcoal production. Fuel-wood meets 80% of all Democratic Republic of Congo's energy needs.<sup>53</sup> Unless alternative income sources are found, widespread forest destruction will continue.

## Specific threats

- Small scale agriculture, the primary cause of deforestation since 1980.
- Major industrial logging, linked to rapidly expanding road networks.
- Illegal logging for charcoal production and wood for fuel.
- Land for populations displaced by conflict.
- Urban expansion.
- Oil extraction.
- Mining for minerals, mainly gold, coltan, diamonds, uranium, manganese and copper.
- Bush-meat hunting.



© James Aldred

Lowland gorilla from Mondika in Congo.

## Projected impacts of deforestation in the Congo Basin

### Rainfall generation

Deforestation and forest degradation could have severe effects on regional<sup>54</sup> and global<sup>55</sup> rainfall generation and on the lives and livelihoods of people in Africa and around the world. A large part of the rainfall in the Congo Basin comes from the recycling of moisture by the forest; 75-95% of rainfall is recycled within the Basin itself.<sup>54</sup> Regional deforestation could have a particularly strong effect on local rainfall, potentially reducing precipitation by 30% and 10-20% in the wet and dry seasons respectively.<sup>55</sup>

The hydro-electric generation potential of the Congo Basin amounts to one-sixth of the estimated global total.<sup>56</sup> The Democratic Republic of Congo alone has the potential to produce 150,000 Megawatts of power.<sup>57</sup>

Researchers have used regional-scale atmospheric simulation to investigate how deforestation in timber concession areas could affect precipitation inside bordering national parks in the Republic of Congo and Gabon. Results showed that rainfall inside parks was especially sensitive to upwind deforestation along the path of airborne moisture travelling inland from the ocean.<sup>58</sup> This could shift the vegetation of some parks from forest to woodland or savannah, with a consequent crash in biodiversity.

Recent studies also show that deforestation in the Congo Basin could cause a decrease in precipitation as far away as Ukraine, Russia (north of the Black Sea) and the US Great Lakes.<sup>55, 56</sup>



A truck loaded with Okumé tree trunks in Gabon.

## Carbon storage

The region's forests store an estimated 24-39 billion tonnes of carbon and release 237 million tonnes of CO<sub>2</sub> into the atmosphere annually.<sup>42</sup> If totally deforested, the forests of the Congo Basin would pump more than 135 billion tonnes of CO<sub>2</sub> into the atmosphere.

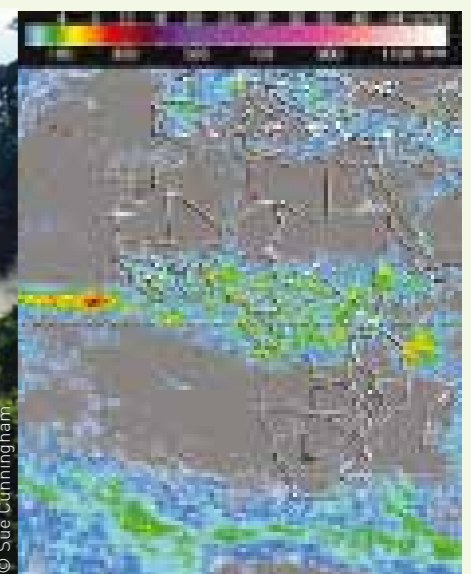
## Biodiversity

The Congo Basin harbours over 400 mammal species, 1,300 bird species, 336 amphibian species, 400 reptile species and 20,000 inventoried plant species, of which approximately 8,000 are endemic.<sup>59</sup> The region's forests are the only home of several great ape species such as the Eastern and Western Mountain Gorilla, the Bonobo, and the Central and Eastern Chimpanzee. These species are being targeted by the bush-meat trade.

## What's happening now?

Leaders of the Democratic Republic of Congo, where the largest area of intact forest remains, have called on the international community to develop a new model for development that would enable them to achieve prosperity without resorting to logging. Meanwhile, the region is opening up forests to new logging concessions. African nations have come together in a Congo Basin Forest Partnership to help reduce deforestation. The UK and Norwegian Governments have also pledged £100 million to a Congo Basin Forest Fund to help reduce deforestation in the region.

Instability and poor governance continue to plague the region, making it likely to be harder to tackle deforestation here than in other regions.



NASA image showing the huge rainfall generation capacity of the Congo Basin.

# Rainforest Facts and Figures

## Rainforest destruction

- Tropical rainforests cover about 1.2 billion hectares of land, an area larger than Europe.<sup>33</sup>
- An area of rainforest the size of a football pitch is lost every four seconds.
- On average, 13 million hectares of tropical forests are destroyed each year, of which 5.5 million hectares are in tropical rainforests – an area nearly twice the size of Belgium.<sup>33</sup>
- Over three-fifths of rainforest clearing occurs in Latin America, over one-third in Asia and about 5% in Africa.<sup>33</sup>

## Forest communities

- 1.4 billion of the world's poorest people depend to some extent on forests for their livelihoods and food security.<sup>60</sup> This is more than the population of China.
- Around 60 million indigenous people depend almost entirely on forests for their survival – roughly equivalent to the population of the United Kingdom.

## Forests and climate change

- Tropical forests store about a quarter of all terrestrial carbon.<sup>4</sup>
- Tropical forests absorb and store around 1.2 billion tonnes of carbon annually - a service worth around €1.2 billion per year.<sup>61, 62, 20</sup>
- Tropical forests hold about 50% more carbon per hectare than trees outside the tropics.<sup>63</sup>
- Tropical deforestation emits about 1.5 billion tonnes of carbon each year - more than the entire global transport sector.<sup>64</sup>
- Every day, deforestation emits CO<sub>2</sub> equivalent to 12.5 million people flying from New York to London.
- Every year, deforestation emits the same amount of CO<sub>2</sub> as 580 coal-fired power stations, equivalent to the total annual CO<sub>2</sub> emissions of the US or China.<sup>3</sup>
- Unless action is taken, the impact of forest emissions on climate change will cost around \$1 trillion a year by 2100.<sup>3</sup>

## Biodiversity and ecosystem services

- Half of all species on Earth live in tropical forests.<sup>21</sup>
- At current rates, deforestation between now and 2050 will result in the loss of natural capital worth between €1.3 and €3.1 trillion per year.<sup>19</sup>
- The global trade in non-timber forest products from tropical forests is worth \$7.5-9 billion per year - more than three times the GDP of Guyana or Belize.<sup>22</sup>
- Medicines derived from tropical rainforests are worth \$108 billion per year - roughly equal to the amount spent on the UK's National Health Service each year.<sup>22</sup>

# Forest Communities: Whose Land is it Anyway?

## Millions are at risk

Deforestation poses a grave threat to the livelihoods of 1.4 billion of the world's poorest people who depend to some extent on forests for their survival and food security.<sup>60</sup> This is more than the population of China. Forests also provide food, fuel-wood, medicinal plants, and shelter for around 60 million indigenous people who depend almost entirely on forests for their way of life. These people are the first to feel the impacts of dwindling resources and faltering ecosystem services as a result of forest degradation, such as droughts, floods, changes in rainfall patterns, and increasingly frequent forest fires. Deforestation and land-use change also make forest peoples increasingly susceptible to outbreaks of infectious diseases<sup>65</sup> and affect the flora and fauna on which they depend.<sup>66</sup>

## Who are the forest peoples?

Indigenous communities are those who have lived traditional nomadic or slash-and-burn subsistence livelihoods within the forests, often occupying them (without destroying them) for centuries. These communities can be quite small, numbering a few hundred individuals, and may be scattered across vast areas of forest. Other stakeholders who depend on tropical forests for their livelihood include economic migrants, subsistence farmers and 'extractivists' such as rubber tappers, small-scale loggers, gold miners, and harvesters of nuts, fruits, berries and medicinal plants. These settlers generally outnumber indigenous populations. For example, between 280,000 and 350,000 indigenous people live in the Brazilian Amazon compared to 25-30 million non-indigenous people. Private sector investors such as oil palm or soya plantation owners, cattle ranchers, and large-scale logging companies have also bought large tracts of tropical forest.

## Deforestation increases migration and conflict

While global demand for commodities and energy is accelerating deforestation, the land available to forest peoples is diminishing. Recognition of the property rights of forest communities varies from Government to Government, but they are often ignored by countries that choose to exploit their forests to raise revenue.<sup>67</sup> The political and human rights of local populations are frequently denied as developers move in to clear the land for agribusiness. Vulnerable populations are forced to migrate, exacerbating poverty, increasing the potential for conflict over land use, and threatening indigenous cultures with extinction.<sup>66</sup>

## Recognising land title can protect forests

Historically, indigenous peoples and traditional communities have played a vital role in protecting forests, thus contributing to the reduction of greenhouse gas emissions. In southern Amazonia, much of the pristine forest that has survived was designated as indigenous reserves, while the surrounding forest has been degraded or converted to agriculture. Now, as the UNFCCC works out a new mechanism to compensate countries for REDD, forest peoples are rightly demanding to be compensated for the environmental services their forests provide.

## Community attitudes to REDD vary

Many communities welcome the idea of REDD payments and hope to benefit from maintaining their forests, believing it might contribute to the alleviation of poverty. Others do not and fear that the mechanism could worsen conflicts over rights to land and natural resources. Since development policies have often disenfranchised forest peoples, there is also scepticism about how equitable the benefit-sharing of REDD payments will be. Some fear they might lose out on such revenue, because their forests may not be under immediate threat and are not emitting CO<sub>2</sub>. Yet, because they have protected their forests and continue to prevent GHG emissions, they argue they should be rewarded for doing so.

## Land ownership is often unclear

Compensation mechanisms, such as REDD, will not work unless they clearly define who should be paid and how. One of the key problems is that land titles in remote forests either do not exist or are hotly disputed, so it can be difficult to determine who owns the rainforest 'asset'. Governments assert ownership of around 70% of the world's tropical forests, but these claims are frequently disputed by forest-dependent peoples, who may not have land records or legal titles to back them up, despite having lived in the forest for generations. The rights to land ownership of these respective communities must be resolved through clear and binding legislation to ensure the equitable distribution of benefits from any future REDD revenues.

## Poor governance has bred mistrust

Forest protection agencies often suffer from poor governance and corruption. In many forest-owning nations, conservation laws and forest policies fail to recognise the rights of indigenous and local communities. Repeatedly, indigenous populations have been forcibly

displaced from their lands to create national parks, and banned from traditional subsistence farming, hunting and fishing in protected forest areas.<sup>68</sup> This has led to mistrust of conservationists, Governments and fears of 'eco-colonialism'.

## A 'New Deal' for forest communities is needed

New financial mechanisms to curb deforestation and CO<sub>2</sub> emissions will only succeed in the long term if they acknowledge the role of forest communities in conserving forests and ensure their full participation in decision-making processes. Equity, justice, human rights and especially land title issues must be addressed rapidly. Solutions should be tailored to address the local and regional risks and opportunities associated with individual forests and the communities within them. Communities must be empowered to decide how they should receive equitable benefits for maintaining the forest's ecosystem services for humanity.

"We want the Government to pay for the environmental services that the communities have provided, as well as providing the conditions by which those movements, like the Alliance of Forest Peoples, can meet with their roots to discuss, approve, and bring to Government a new system of public policies to implement activities in the Amazon that are not based on soy, illegal timber, or cattle."

**Manoel Cunha, National Rubber Tappers Union, Brazil**

# Who Will Pay to Protect Forests?

“For many developing countries, deforestation is their largest source of emissions. The current negotiations represent a historic opportunity to help developing countries find economically viable alternatives to deforestation, and participate in the global effort to address climate change.”

Peter C. Frumhoff, IPCC Lead Author and Director of Science and Policy, Union of Concerned Scientists, USA

Developing countries without economic alternatives will sacrifice trees for survival or prosperity, just as has happened already in Europe, the Americas and Asia. There is much debate about the appropriate financial mechanisms necessary to curb deforestation, but there is growing international consensus that creating an alternative economic scenario for forests is vital.

However, putting in place financial incentives and building the necessary capacity to prevent deforestation will cost a great deal of money. This is a necessary corrective to a global economic system which has never had to account for the free goods and services provided by nature. Paying for forests is one of many ways the world is beginning to bring environmental externalities on to the balance sheet.

A combination of different financial approaches will be required to sustainably reach the funding levels needed to halt deforestation. The UN is leading the way with its framework for Reducing Emissions from Deforestation and Degradation (REDD), which is the most important – but not the only – large scale funding opportunity.

## How much money is needed per year?

This is hard to calculate exactly, but several analyses provide indicators. The Informal Working Group on Interim Financing for REDD+ (IWG-IFR) has estimated that USD 22-37 billion are needed by 2015 to reduce deforestation by 25%. According to the Eliasch Review, we will need USD 17-33 billion per year to cut all deforestation by half by 2030<sup>3</sup> and the EU has suggested €15-25 billion per annum would be needed to halve deforestation by 2020.<sup>69</sup>

## How is this calculated?

These figures are often arrived at by determining the “opportunity costs of deforestation” i.e. the income lost to the economy when a country reduces deforestation. This differs widely among countries and communities - from a few dollars per hectare for a poor Sri Lankan family with few economic alternatives, to as much as \$3000 per hectare for an oil palm farmer in South East Asia. Also considered in these analyses are implementation costs such as administration, monitoring and law enforcement.

## Where could sustainable funding come from?

Money can be raised at the national level by developing country governments, from the private sector using carbon markets, or at the international level using innovative financial mechanisms.

### National-level mechanisms

Currently, most governments raise money through taxpayers. Donations can be delivered as aid, but aid is dependent on political will and the track record of rich governments meeting their stated obligations is not good. Several mechanisms offer possibilities to scale up funding at the national level: a carbon tax levied on either fossil fuel producers or users could raise USD 16 billion a year; earmarking (hypothecating) revenues from the auctioning of allowances could generate USD 8-30 billion annually and is currently proposed in both the EU and US legislation; government-backed bonds such as the ‘Rainforest Bond’ could raise USD 4-20 billion in the short term but governments would need to repay this in the future. Given the vast sums raised by governments within a few weeks to stabilise the financial sector in late 2008, this is perfectly possible but requires action commensurate with a political crisis - something the threat of deforestation and climate change has so far failed to engender.

### Carbon markets

Today, rainforests can only deliver profits when they are cut down and converted into commodities that markets can sell. Global carbon markets offer a way to make forests worth more alive than dead by valuing the carbon stored in trees. Carbon markets could generate between USD 15-45 billion annually of which USD 4-10 billion could be for emissions reductions from REDD+. Finance through carbon markets is unlikely to begin before 2013, but the much smaller voluntary markets can contribute now. Emissions reductions from forests financed through carbon markets should not be seen as a substitute for domestic reductions. Stringent mitigation targets in developed countries must be maintained to ensure that industrialised countries do not simply continue to pollute while claiming to be saving forests. Fixing emissions from factories while leaving rainforests to burn is not an option either. Unlike factories, once lost, rainforests and the ecosystem services they provide cannot be replaced.

### International mechanisms

Some countries have proposed setting up international funds to pay for REDD+. These funds would be generated through new and innovative financial mechanisms operating outside of the domestic policies of national governments. Many options exist that could generate revenue at scale for tropical forests: a tax on the catastrophe element of global insurance premiums could generate USD 3 billion annually; levies on international maritime and aviation could raise up to USD 30 billion annually; and the international auctioning of allowances

as proposed by Norway could raise USD 9-35 billion per year.

## Paying for forests now – harnessing all sources

Tackling deforestation is a global emergency that demands an urgent global response. All available sources of funding will be required to reach and maintain the flows of money needed to halt deforestation. A flexible mix of national, international and carbon market solutions will be needed to tap the greatest number of sources and meet the many different needs and circumstances within forest-owning nations.

Developing and implementing solutions at this scale will require an increase in capacity in many forest-owning nations. Others are already well-equipped to participate in the essential pilot schemes required to get innovative payment schemes for forests off the ground.

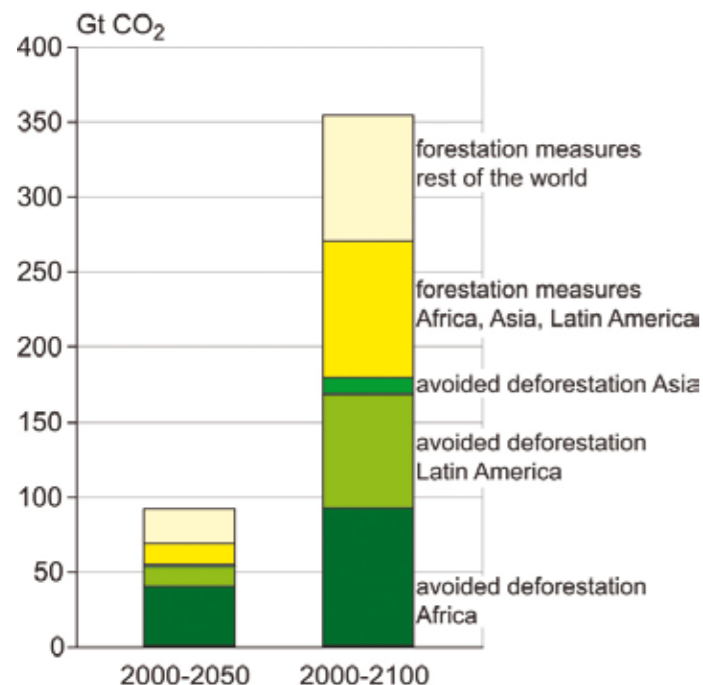
### An ‘Emergency Package’ for forests

The Informal Working Group on Interim Finance for REDD+ (IWG-IFR) is an international collaboration of developed and forest-owning countries that was established by His Royal Highness the Prince of Wales to emphasise the urgency and importance of greatly scaling up funding for tropical forests. The IWG-IFR follows on from the work of the Prince’s Rainforests Project (PRP) who developed a proposal for an emergency financing package for tropical forests.

The IWG-IFR in its recent report estimates that if financing of USD 23-38 billion were made available for the period 2010-15 a 25 % reduction in annual global deforestation rates may be achievable by 2015. Immediate action on REDD+ could contribute tremendously to countries’ joint efforts to address climate change. The key elements of a simple, effective, efficient, and equitable mechanism could be set up by the end of the first quarter of 2010, based on the agreed outcome of COP 15 in Copenhagen.

# New Policy Solutions

The world's forests can make a very significant contribution to the fight against climate change in a number of ways. The IPCC estimates that 65% of the total mitigation potential of the forest sector is located in the tropics.<sup>11</sup> About half of this could be achieved by reducing deforestation.



Reducing deforestation and replanting native forests can make a big difference to tackling climate change. From the IPCC's 4th Assessment Report

The IPCC concentrates on the first three tools for climate mitigation in forests summarised below. In addition, other essential tools are Payments for Ecosystem Services and improvements in governance frameworks. Taken together, these mechanisms have the potential not only to mitigate climate change, but will also help to strengthen the resilience of forests and their peoples in coping with the effects of climate change.

## 1 Reducing Emissions from Deforestation and Degradation – the REDD+ mechanism

The basic idea behind Reducing Emissions from Deforestation and Degradation (REDD+) is very simple: countries that are willing and able to reduce emissions from deforestation should be financially compensated for doing so. To date attempts to curb deforestation have largely been unsuccessful. REDD+ provides a new opportunity to break this historical trend.

The Bali Action Plan at COP 13 decided that a comprehensive approach to mitigate climate change should include: "Policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries". REDD+ is primarily about emissions reductions, but REDD+ has the potential to deliver much more. It can simultaneously address climate change and rural poverty, while conserving biodiversity and

sustaining vital ecosystem services. Although these benefits are real and important considerations, the crucial question for the UNFCCC is to what extent the inclusion of development and conservation objectives will promote the overall success of a future REDD+ framework and the extent to which it might hamper the ongoing process of REDD+ negotiations.

## 2 Maintaining and enhancing carbon stocks – in or out of REDD+?

In order to avoid perverse incentives for countries with historically low deforestation rates to start deforesting and so raise their 'reference level' (baseline) to gain emissions credits once payments begin, there have been calls for REDD to include incentives for maintaining standing forests.<sup>70</sup> Essentially, this would entail payments to countries based on their carbon stocks.

Sustainable Forestry Management (SFM) also has a role to play in balancing the need for local development with sustainable use of environmental resources. Efforts to move to sustainable logging practices in developing countries have so far met with limited success. But improved logging techniques – alongside improvements in social and environmental benefits – could help to maintain developing countries' carbon stocks.

## 3 New Plantations – the Clean Development Mechanism

New plantations can sequester carbon from the atmosphere at a rate of 5 -15 tonnes per hectare per year. While this is no substitute for the range of Ecosystem Services provided by 'living carbon' stocks in existing rainforests, the trade in illegal timber from tropical forests cannot be halted unless an alternative source of supply is created. Therefore, there is a pressing need to expand plantation forestry (afforestation, new forests; reforestation, replacement forests) to supply sustainable timber that meets the highest certification standards. Carbon credits for the carbon sequestered by new trees have been available under the Kyoto Protocol's Clean Development Mechanism (CDM) but its complexity has resulted in just one approved commercial forestry project in the developing world. This has to change.

## 4 Payments for Forest Ecosystem Services

Payments for Ecosystem Services (PES) are based on the beneficiary of a service paying the provider. In this case, forest dwellers or owners could be remunerated for the ecosystem services their forests provide at local, regional and global scales. Such payments are still in an experimental phase, although there have been early successes in countries such as Costa Rica, and voluntary PES markets are beginning to develop in watershed protection. With all the additional benefits it provides, 'living carbon' in forests is likely to trade in future markets at a premium compared to 'dead carbon' such as liquid CO<sub>2</sub> stored underground. However, simply bundling ecosystem services in with carbon credits may not fully realise the potential future value of these services.

## 5 PINC: Proactive Investment in Natural Capital – an emerging framework?

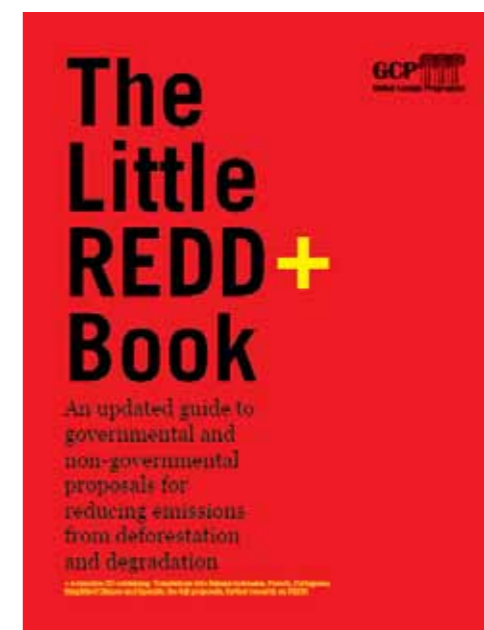
The GCP and partners have proposed Proactive Investment in Natural Capital (PINC) to the UN Convention on Biological Diversity (CBD) as a parallel framework to REDD+ under the UNFCCC. PINC would recognise and reward the function of large areas of intact forests as 'global utilities' providing ecosystem services that underpin food and energy security at local to global scales. Not linked to reducing carbon emissions, PINC calls for funding or investment on a per-hectare basis for tropical forests for the services they provide: storing carbon, creating rain, moderating river flow and weather conditions, and protecting biodiversity. Under PINC, nations and landowners that maintain their forests could become the owners of valuable ecosystem industries in the future.<sup>71</sup>

## 6 Combating the Drivers of Deforestation

Governments are taking measures to exclude illegally sourced timber from commercial supply chains. The EU's Forest Law Enforcement, Governance and Trade (FLEGT) and the Lacey Act in the US both aim to improve the governance of timber production from tropical forests. There is also a need to strengthen supply chains for agribusiness products from tropical forest nations. The Forest Footprint Disclosure Project (FFD) is a new UK government-supported initiative, created to help investors identify how an organisation's activities and supply chains contribute to deforestation, and link this 'forest footprint' to their value. Modelled on the successful Carbon Disclosure Project, it aims to create transparency and shed light on a key challenge within investor portfolios, where currently there is little quality information. Participating companies will be asked to disclose how their operations and supply chains are impacting forests worldwide, and what is being done to manage those impacts responsibly. They will also gain a better understanding of their own environmental dependencies, and how the changing climate and new regulatory frameworks could affect access to resources and the cost of doing business in the long term.

**Natural capital needs to acquire market value – and fast.**

"While countries can be compensated for planting forests, they cannot be compensated for avoiding deforestation. Countries like Papua New Guinea would thus be doubly better off if they cut down their ancient hardwood trees and replanted. But this makes no sense economically or socially. These countries should be given incentives to maintain their forests."  
**Joseph Stiglitz, Nobel Laureate in Economics**



## The Little REDD+ Book

The Little REDD+ Book is a non-partisan guide to proposals for Reducing Emissions from Deforestation and Degradation (REDD+) within the UNFCCC process. The book was first launched at COP 14 in Poznan in December 2008 and the most recent third edition will be released at COP 15 in Copenhagen.

Drawing upon work undertaken by The Prince's Rainforests Project, the Little REDD+ Book introduces a framework that allows current and future proposals to be compared and understood in a consistent way. The book aims to bring clarity to this complex and rapidly-evolving area by providing insights and information on the process in non-technical language, including a comparative analysis of thirty-two key governmental and non governmental proposals. The publication aims to help the broad audience of forest stakeholders, including people who live and work in tropical forests, Parties to the UNFCCC, NGOs, the scientific community and the media.

The Little REDD+ Book will continue to be updated online as new research, proposals and projects evolve. It is hoped that the Little REDD Book will serve as platform for the many groups committed to consensus-building at this critical time for forests.

[www.theREDDdesk.org](http://www.theREDDdesk.org)

"Why would we cut down trees if people are going to pay us to protect them? We can prevent deforestation and also use the money to reforest the areas in critical condition."  
**Governor Barnabas Suebu, Papua Province, Indonesia**





# Bridging Policy Barriers

In the complex political and economic landscape of global deforestation, different mechanisms are required depending on local, national, and regional circumstances. While many political and technical roadblocks have already been overcome, there are still complex challenges which must be addressed if the international community is to achieve its goal of halting deforestation.

## Political roadblocks

### Sovereignty

The issue of sovereignty has slowed the evolution of positive incentive mechanisms in many forest-owning nations. To take the example of Brazil, ever since the British stole their rubber plants and planted them in Malaysia to enrich themselves, the idea of markets and foreign investors owning or controlling Brazilian forests has understandably created deep concern in the world's largest forested nation. Whilst some may argue that forests are a global public good, nations with forests within their borders point out that their forests belong to them alone. REDD defuses this problem, since it does not entail payments for tangible carbon stocks, but rather for an intangible reduction of emissions. However, land rights and ownership go to the heart of how benefits should be distributed; in frontier communities, these issues can be particularly complex. Sovereignty need not be an issue, as long as large-scale foreign land ownership is not at stake.

### Historical Differences in CO<sub>2</sub> Emissions

It has been cogently argued that the industrialised nations (known as Annex 1 countries under the UNFCCC), responsible for the climate change problem in the first place, should not be allowed to simply buy their way out of their own CO<sub>2</sub> emissions reduction commitments by offsetting with forest credits from the developing world. This ultimately kept forests out of the first Kyoto commitment period which began in 2008, but was negotiated a decade earlier. However, this cannot be a choice between reducing industrial emissions and halting deforestation: we must do both and funds from carbon markets are likely to be essential to reach the level of funding required. A renegotiation of more stringent reduction targets in Annex 1 countries would help address these concerns in the second commitment period starting in 2012.

### Differing National Contexts

Paying countries to reduce their emissions by lowering their deforestation rates against national baselines rewards countries that are 'doing badly for forests' (have high historical deforestation rates), but not those who are 'doing well for forests' (have low historical deforestation rates). In the world of biodiversity banking, incentives to curb deforestation in the 'current account' activity at the frontier of deforestation remains an urgent priority; but nations with a 'deposit account' of intact

forest also deserve financial rewards. Otherwise, these standing forests could become magnets for logging or agribusiness as these activities are pushed away from regions where positive incentives are in place to protect them. It is essential that the UNFCCC takes account of differences of this kind in the design of the REDD mechanism. Ultimately, other mechanisms like Payments for Ecosystem Services may hold the key to bridging these divides.

### Voluntary Markets

While it seems increasingly likely that an international agreement on REDD will come into force from 2012, much work is still needed on the design of this mechanism. This is especially true if forests are to be included in the world's regulated carbon markets. The fast-growing voluntary market provides an essential testing ground for innovation and must therefore be encouraged. In addition to reducing emissions in their own right, pilot projects will inform the policy development process and help to shape the regulated markets of the future.

## Technical roadblocks

### Permanence

Perhaps the most often cited concern with plantation projects (but which also applies to carbon stocks and Payments for Ecosystem Services) is permanence: the notion that because forests are susceptible to fire, any carbon sequestered and stored will be released back into the atmosphere should the trees burn. As a result, the regulated carbon markets issue temporary credits for forestry projects, which expire after a set number of years. This has dampened investor interest.

Singling out forests in this respect makes little sense. Moist tropical forests do not burn unless fires are deliberately started to clear land. Moreover, industrial installations also have a limited life span. The Hancock Timberland Investor reported in 2004 that the risk of loss from a natural event in managed forests averages 0.04% per year. A new hydropower plant may only be expected to function for 40 years, whereas a well-managed forest can survive for generations. Remote areas of 'living carbon' are harder to monitor than a high-tech power plant, but it is becoming easier and cheaper to do so.

Well-tested methods are also available to address permanence issues, including the maintenance of forest buffers to counter losses in carbon stocks, insurance policies, market discounts to factor in risk, pest control and fire management. Furthermore, replanting with native trees rather than exotic species such as eucalyptus will likely result in more resilient forests and greater local community benefits.

Creating positive incentives to reduce human impacts on forests will reduce the risk of fires spreading, increasing

the permanence of the carbon stocks and their resilience to future climate change.

### Leakage

Another valid concern is that positive incentives to keep forests standing in one place may result in deforestation shifting to another area. This is particularly problematic in vast forested regions like the Amazon or the Congo, spanning both regional and national borders. This problem can largely be addressed by carbon accounting at national or sub-national level (as opposed to project level) so that any leakage is still accounted for. Methodologies have also been demonstrated in pilot projects that effectively reduce leakage, or identify and measure where it occurs, so that it can be deducted from the project's total carbon benefits. To contain leakage across national borders it is essential for the international agreement for Reducing Emissions from Deforestation and Degradation to be as inclusive as possible.<sup>72</sup>

### Additionality

Additionality is the principle that any activities which earn credits in a carbon market by reducing emissions must be additional to activities that would have happened without this positive incentive. In short, additionality ensures that commercial or already funded projects do not freeload subsidies in the name of climate change. As with all technical roadblocks, overcoming additionality concerns calls for effective forest management and monitoring (see below) so that only projects that are certifiably proven to meet these requirements receive finance.

### Flooding the Market

Could the sheer volume of carbon stored in the world's forests undermine the efficacy of carbon markets by flooding them with cheap credits? In terms of the scale of mitigation action needed, emissions reductions from deforestation and removals from enhancements cannot produce runaway volumes of credits. Over the long term, the IPCC estimates that forestry-based mitigation is biologically constrained to offering 15-20% of the overall reductions needed. The 2008 Eliasch Review confirmed these findings. This suggests that the integrity of carbon markets will be guaranteed as long as the introduction of carbon stocks from forests is carefully managed (for instance a capped quota for forest credits could immediately put this issue to rest) and sufficient political will exists to set and meet increasingly stringent emission reduction targets. This will keep demand for credits high.

### Monitoring

Monitoring deforestation has moved from time-consuming reliance on direct field-measurements to the use of satellites capable of real-time monitoring. Some systems are so advanced that even selective logging can be tracked. NASA, ESA, Japan, Brazil and India all

have good systems in place, though most countries lag behind. New radar sensors will improve measurements of degradation and carbon stocks directly from space. It is therefore possible to monitor the condition and size of forests with increasing accuracy. Computer modeling can also predict deforestation trends. However, this will be no substitute for ground truth checks by reliable bodies at regular intervals. New satellite-based tracking systems, such as Helveta's, can monitor bar-coded timber from Borneo to Britain, improving certification and squeezing illegal timber from markets.

### Standards

The voluntary carbon market has got off to a difficult start. Like any new market, few reliable standards exist and some suppliers of voluntary forest credits have been found wanting. However, reliable models of good practice are growing. The Nature Conservancy and local partners have conducted and documented a working example of how carbon stocks and emissions reductions can be scientifically quantified, monitored and certified through their Noel Kempff Climate Action Project in Bolivia. Rainforest Concern has done the same with its projects in old growth forests in Ecuador. The IPCC has developed widely tested and broadly accepted guidelines for measuring carbon project benefits and improved standards are appearing, but few of these relate to forests. The Climate, Community and Biodiversity (CCB) Standards are accepted as one of the best for avoided deforestation projects, since they include sustainability and local livelihood criteria.

# Case Studies: Forests and Finance



**Paying Communities to Stop Deforesting: The Amazonas Initiative**

Amazonas is the largest state in Brazil, with 16.9 million hectares of protected forest reserves, containing the equivalent of 7 billion tonnes of CO<sub>2</sub>. Until 2002, the Government of Amazonas State used to distribute free chainsaws to its population as a strategy to promote “development”. Since 2003, a major change has taken place with the establishment of the State Secretary for Environment and Sustainable Development and the implementation of the Zona Franca Verde (“Green Free Trade Zone”). This initiative resulted in a 51% reduction in deforestation in 2003-5 alongside economic growth of around 9% per year, almost four times higher than Brazil’s national average.<sup>73</sup> As a result of sales tax exemptions on non-timber forest products, the prices of copaiba oil, Brazil nut, latex and other sustainable products has more than doubled. Since 2003, the State Government of Amazonas has created 8.2 million hectares of new parks and reserves - an increase of 133%. Today, forests cover 98% of the State’s surface.

The Amazonas State Climate Change Policy is the first of its kind in Brazil. The Bolsa Floresta (“Forest Bursary”) programme, financed by a partnership between Amazonas State and Brazil’s largest private bank, Bradesco, offers financial incentives to indigenous populations and extractivists who commit to zero deforestation. It also provides cash subsidies for sustainable activities such as bee-keeping, fish-farming or forest management. Set up in February 2007, the Bolsa Floresta is an example of how simple mechanisms can have a profound effect in reducing deforestation while also contributing to poverty alleviation.

The GCP has been instrumental in bringing together the Amazonas Government and investors in the UK to design financial instruments to facilitate Payments for Ecosystem Services. Such payments are needed to counteract the pressure from surrounding states to convert forests for agriculture and cattle and to compensate extractivist and indigenous populations for the opportunity costs of alternative land uses.



**Avoiding Deforestation: Carbon Conservation in Aceh, Indonesia**

In April 2008, Merrill Lynch International and Carbon Conservation signed an agreement for the world’s first commercially financed, independently validated Avoided Deforestation project in the endangered Ulu Masen forest in Aceh, Indonesia. Fauna & Flora International (FFI) also played a central role in conservation and community related aspects.

This project will provide the revenue required to reclassify forests that are currently zoned for logging. Carbon credits will be generated through the protection of 750,000 hectares of rainforest, preventing 100 million tonnes of CO<sub>2</sub> emissions over 30 years - the equivalent of 50 million flights from London to Sydney. This initiative is predicted to reduce deforestation of Aceh Province’s endangered Ulu Masen forest by 85%. The 3.3 million carbon credits forecast to be generated annually will help finance development projects for local communities, who are some of Indonesia’s poorest. This carbon finance project will also provide an incentive to preserve the last refuge of several endangered species including Sumatran rhinoceroses, tigers, orangutans, elephants and clouded leopards.

The first carbon credits are expected to be sold in 2009. The key components of the deal include a pre-payment for exclusivity, a guaranteed off-take agreement for carbon credits over the first four years, a call option for further carbon credits over six years, and an upside sharing agreement. The financing resulting from this deal includes a guaranteed \$9 million with a ceiling contingent upon the volumes and value of carbon credits and ecosystem benefits transacted over the project’s 30-year lifetime. Income will also be generated through “Aceh Green” forest products such as sustainable palm oil, coffee and cacao. Buffer zones will be reforested for permanent protection.

As the first of its kind, the project is likely to have a significant impact on future REDD projects.



**Investing in the ‘Forest Utility’: Canopy Capital in Guyana**

Canopy Capital Ltd. was established in 2007 in partnership with the Global Canopy Programme to drive capital to the rainforest canopy. Canopy Capital has pioneered an investment template for first-movers in an emerging market for rainforest ecosystem services, including carbon and water storage, generating rainfall, moderating climate, and preserving biodiversity. All of Canopy Capital’s investments will benefit local communities and conservation efforts in tropical forests, which will receive 80% of eventual profits.

In March 2008, Canopy Capital entered into its first partnership with the Iwokrama International Centre for Rainforest Conservation and Development (IIC) in Guyana. Gifted to the Commonwealth in 1989 to develop best practices for sustainable forest management, the million-acre Iwokrama Reserve lies at the heart of the Guiana Shield, one of only four intact rainforests left in the world. Canopy Capital is using risk capital to place a financial value on the ecosystem services of Iwokrama’s forests. This is the first ever deal of its kind.

Canopy Capital’s initial investment will secure the future of Iwokrama for the next five years. The longer term objective is to raise a \$100 million 10-year bond in a capital guarantee structure. The funds will be used to continue the sustainable management of the Iwokrama Reserve, providing livelihoods and business partnerships for the 7,000 people living in the forest and surrounding area. Canopy Capital is also in discussion with major investment banks to develop an ‘Ecosystem Service Certificate’, which would generate sufficient income to fund Iwokrama’s research and conservation programmes.

If successful, the Iwokrama investment template can be rolled out across the globe and make a significant contribution to the fight against climate change.



**Protecting Biodiversity: Carbon Financing for Madagascar’s Makira Forest**

Madagascar has been classified as one of the world’s 34 biodiversity hotspots. Decades of deforestation have left eastern Madagascar with only 8.5% of its original forest cover. Wildlife Conservation Society (WCS), Conservation International (CI) and Madagascar’s Ministry of Environment, Water and Forests (MEEF) have teamed up to develop carbon financing options to protect 350,000 hectares in the Makira Forest, the largest contiguous forest left in eastern Madagascar.

The Makira Forest Project aims to achieve the related goals of biodiversity conservation, economic development and carbon sequestration. The long-term objective is to reduce deforestation rates to 0.07 percent - the same rate as in Madagascar’s national parks. An estimated 9.5 million tonnes of CO<sub>2</sub> emissions will be mitigated over the next 30 years as a result. Investors benefiting from carbon offsets through this project include Mitsubishi, NAVTEQ and the music bands Pearl Jam and Dixie Chicks.

A vital area for biodiversity conservation, the Makira forest is home to many critically endangered plant and animal species unique to Madagascar, including the Serpent Eagle, Red Ruffed Lemur and Silky Sifaka. The Makira forest is also the principal resource for about 150,000 people from different ethnic and community groups. Driven by poverty, high population growth, and a lack of agricultural alternatives, these populations resort to slash-and-burn clearing for agriculture and unsustainable extraction of non-timber forest resources. Poaching for valuable hardwood is also prevalent. Efforts to relieve pressure on the Makira forest while supporting these communities include improving irrigation for lowland rice fields and training communities in sustainable agriculture. As well as transferring more management rights from the Government to the local people, this project has the potential to generate jobs and ecotourism.

# Building Political Momentum

## The Forests Now Declaration ([www.ForestsNow.org](http://www.ForestsNow.org))

Launched in the Amazon in September 2007, the Forests Now Declaration has been endorsed by hundreds of high-level individuals and organisations worldwide, including Heads of State, forest community leaders, Nobel Prize winners, scientists and NGOs. Sponsored by the Global Canopy Programme, the Forests Now Declaration calls on world Governments to take immediate action to tackle deforestation. After gaining support in both forested nations and the world's carbon capitals, the Declaration captured global attention at the Conference of the Parties to the UNFCCC in Bali, December 2007.

The Forests Now Declaration calls for a series of carbon mitigation policies and market reforms that will create positive incentives for the protection of tropical forests and safeguard the vital services they provide, including carbon capture and storage. The Declaration has mobilised a significant body of opinion to pressure Governments to move forests rapidly up the climate change agenda. Endorsers of the Declaration, the 'Forests NOW Network', are continuing to push for action on forests in the negotiations leading up to the UN agreement on Kyoto II in 2012. Members of the Forests NOW Network are also active in influencing negotiations relating to forests in the emerging US carbon market, the review of the EU Emissions Trading Scheme (ETS) and within the Convention on Biological Diversity (CBD).



Hana Blix, Former Head of the UN Monitoring, Verification and Inspection Commission, with the Forests Now Declaration.

The Declaration calls for six actions by Governments:

- 1 Ensure that carbon credits for reduced emissions from deforestation and the protection of standing forests are included in all national and international carbon markets, especially those created by the UN Framework Convention on Climate Change.
- 2 Simplify and expand carbon market rules, including the Clean Development Mechanism, to encourage reforestation, afforestation and sustainable forest management.
- 3 Include tropical forest and land use carbon credits in the EU Emissions Trading Scheme, while maintaining strong incentives to reduce industrial emissions.
- 4 Encourage early action and new market mechanisms that recognise the value of carbon stocks and forest ecosystem services, and support appropriate voluntary carbon market standards.
- 5 Provide assistance for developing nations to build capacity to fully participate in the carbon markets, and to evaluate the ecosystem services their forests provide.
- 6 Incentivise the sustainable use of degraded land and ecosystems, and remove incentives that encourage forest destruction.

Please add your support now at [www.ForestsNow.org](http://www.ForestsNow.org).



Pedro Garcia of the indigenous federation COIAB signs the Forests Now Declaration with Amazonas Secretary of State for Environment, Virgilio Viana, high in the canopy of the Brazilian Amazon.

# The Forests NOW Network

"This Declaration ought to unite all forest peoples across the whole world behind it."  
**Pedro Garcia, Association of Indigenous Organisations of the Brazilian Amazon (COIAB)**

"We believe carbon markets must be reframed to support forests and their communities. Together, we must find innovative ways to protect our forests now [because] if we lose forests, we lose the fight against climate change."  
**Sir Michael Somare, Prime Minister of Papua New Guinea**

"The planet is in crisis and each of us has a moral obligation to mobilise all available resources in its defence. There are no easy answers to the complex causes and effects which are placing God's creation in danger, but inaction is indefensible."  
**His All Holiness Ecumenical Patriarch Bartholomew**

"Deforestation is like a cancer, eating away at a very important organ for the climate system and planet as a whole. But it is not happening because of an incapacity to stop it, but because there have been no attractive alternatives for the agents that cause it."  
**Dr. Antonio Nobre, National Institute for Amazonian Research (INPA), Brazil**

"Global markets for products like beef and coffee have been driving deforestation. The measures called for in this Declaration offer an opportunity to compete head to head with the money a country was making elsewhere while protecting forests. We absolutely must do it if we are serious about climate stability."  
**Kevin Conrad, Executive Director, Coalition for Rainforest Nations, Papua New Guinea**

"Global warming is a greater long term threat to mankind than weapons of mass destruction. There is simply no doubt that global warming is happening. A vital part of tackling the problem is to halt the destruction of tropical rainforests as a matter of urgency."  
**Hans Blix, Former Head of the UN Monitoring, Verification and Inspection Commission**

"We've proven that we can reduce deforestation when the political will and the right incentives for people who live in the forests are there. If applied around the world, models like this can have significant and immediate impact on climate change."  
**Eduardo Braga, Governor of Amazonas State, Brazil**

"My forest is relatively intact. I want it to stay that way"  
**Irwandi Yusuf, Governor of Aceh, Indonesia**

## Some other new initiatives for forests

**Woods Hole Research Centre**  
[www.whrc.org/policy/REDD](http://www.whrc.org/policy/REDD)  
 The Forum on Readiness for REDD is a multi-stakeholder initiative focused on practical approaches for building REDD readiness through cross-stakeholder dialogue, South-South collaboration, and linking local expertise with regional readiness efforts. The Forum operates as a neutral convening space to allow various stakeholders involved or interested in REDD readiness to build understanding and capacity, and interact with different stakeholder groups and regions. The Forum relies on leadership from developing countries, including governments, civil society, and indigenous groups, and will also include other important stakeholders such as international NGOs, multilateral institutions, and representatives from the private sector.

**Prince's Rainforests Project**  
[www.princesrainforestsproject.org](http://www.princesrainforestsproject.org)  
 The Prince's Rainforests Project (PRP) is drawing together leaders from Government, business and NGOs to develop practical solutions to the problem of tropical deforestation. Led by a Steering Group comprising sixteen of the world's largest companies and leading experts such as Lord Stern, the PRP's three main priorities are: establishing a value for the global "public utility" services provided by the rainforests; identifying ways to raise the revenue for these services; and working with rainforest countries to develop transfer mechanisms which are sustainable, equitable and verifiable.

**The Forests Dialogue**  
[www.theforestsdialogue.org](http://www.theforestsdialogue.org)  
 The Forests Dialogue (TFD)'s 'Initiative on Forests and Climate Change' brought together more than 250 representatives from diverse interests and regions to discuss the pivotal role forests can play in mitigating climate change. This multi-stakeholder dialogue culminated in the Global Forest Leaders Forum in Washington DC in September 2008 and the release of a statement, 'Beyond REDD: The Role of Forests in Climate Change', which issued five guiding principles for including forests in climate change negotiations.

**Avoided Deforestation Partners**  
[www.adpartners.org](http://www.adpartners.org)  
 Avoided Deforestation Partners (ADP) has convened a group of international climate policy experts to develop a "REDD tool box" to estimate the real emission reductions of a range of REDD projects. The goal is to accelerate the implementation of REDD projects, ensure their environmental integrity, and prevent the fragmented approach that has occurred in the afforestation and reforestation sector. In September 2008, ADP hosted Nobel laureates Al Gore and Wangari Maathai at a landmark event to push for the inclusion of tropical forests in climate policy.

# Small Victories, Big Milestones: The Road to Copenhagen



UN COP 13, Bali 2007

UN COP 14, Poznan 2008

UN COP 15, Copenhagen 2009

## Political milestones for forests

**Dec 05** Papua New Guinea and Costa Rica table the first proposal to “stimulate action to reduce emissions from deforestation”. This will go on to become REDD.

**Oct 06** ‘The Stern Review on the Economics of Climate Change’ draws global attention to the financial impacts of climate change and the importance of curbing deforestation.

**06 – 07** The UNFCCC holds technical workshops for countries to develop a framework relating to reducing emissions from deforestation in developing countries.

**Sep 07** The Forests Now Declaration - signed by hundreds of high level endorsers worldwide - calls on Governments to include tropical forests in the world’s emerging carbon markets.

**Oct 07** The World Bank launches the Forest Carbon Partnership Facility, initially seeking \$300 million to finance emissions reductions through forest conservation.

**Dec 07** The Government of Norway pledges \$560 million to rainforest conservation.

**Dec 07** At the UN Climate Change COP 13 in Bali, Parties agree in principle to include emissions from tropical forests within future carbon markets. The ‘Bali Roadmap’ gives the world community 2 years to negotiate REDD in its final form.

**Jan 08** The European Commission initiates a review of the EU Emission Trading Scheme – the world’s biggest carbon market – to define new rules effective from 2013. Tropical forests, excluded from this market since its inception, are now under consideration.

**Apr 08** Rainforest peoples from 11 nations gather in the Brazilian Amazon to sign the Manaus Declaration demanding a greater say in future climate negotiations.

**May 08** At the UN Biodiversity Conference in Bonn, German Chancellor Angela Merkel pledges €500 million/year for the protection of tropical forests and biodiversity, raised from the auctioning of emissions permits.

**Jun 08** Phase 1 of ‘The Economics of Ecosystems and Biodiversity’, a landmark review commissioned by Germany and the European Commission, reports that deforestation is costing the global economy \$2-5 trillion annually. The final Review will be delivered in 2010.

**Jun 08** In the US, climate change legislation, including the Lieberman Warner Bill, fails to make it to the Senate floor.

**Jun 08** The Congo Basin Forest Fund is set up to battle deforestation in central Africa. British Prime Minister Gordon Brown and Norwegian Prime Minister Jens Stoltenberg together pledge £108 million.

**Jul 08** The first 14 countries are selected by the World Bank’s Forest Carbon Partnership Facility to receive funds for conserving their tropical forests.

**Aug 08** Brazil’s President Lula launches an international ‘Forest Fund’ to finance conservation and sustainable development in the Amazon. The goal is to raise \$21 billion by 2021. Norway pledges €1 billion to the fund through to 2015.

**Sep–Oct 08** The European Parliament’s Industry and Environment Committees both vote to include forest credits in the European carbon market, conditional upon an international agreement in 2012, as well as earmarking funds from the auctioning of emissions allowances.

**Oct 08** At the IUCN World Conservation Congress in Barcelona, The Forests Dialogue — a coalition of more than 250 forest stakeholders — issues guiding principles for including forests in climate change negotiations.

**Oct 08** The UK Government’s Eliasch Review, ‘Climate Change: Financing Global Forests’, concludes that market-based mechanisms are essential to reach the levels of funding required to halt deforestation.

**Oct 08** Ghana is the first nation to sign up to a Voluntary Partnership Agreement (VPA) to export only legally harvested timber to the EU under the latter’s new Forest Law, Enforcement, Governance and Trade (FLEGT) agreement.

**Nov 08** Barack Obama is elected President of the United States. A new response to the climate crisis and the forest crisis are awaited from the world’s largest economy.

**Dec 08** UNFCCC COP 14 Poznan: a critical marker on the countdown to COP 15 in Copenhagen.

**Dec 08** EU Plenary: will the EU climate package pass, and will forests fare as well as they did in the Parliamentary Committee votes of Autumn ‘08?

**Jun 09** Subsidiary Body for Scientific and Technological Advice (SBSTA)

**Aug 09** UNFCCC, AWG-LCA and AWG-KP, Bonn: Intersessional informal consultations to further the policy track on REDD.

**Sep 09** UNFCCC, AWG-LCA and AWG-KP, Bangkok: Ninth session of the AWG-KP and seventh session of the AWG-LCA.

**Nov 09** UNFCCC, AWG-LCA and AWG-KP, Barcelona: Last stop intersessional before COP 15.

## Key stepping stones to 2012/13

**Dec 09** UNFCCC COP 15 Copenhagen: the framework for a global climate deal including forests must be finalised, leaving time for ratification by 2012.

**Oct 10** Millennium Development Goals are reviewed, including targets for biodiversity.

**2011** US carbon market begins to emerge?

**Dec 12** Kyoto II ratified and – barring a disaster at COP 15 – REDD begins to be funded as part of the international community’s new deal on climate change.

**2013** Phase III of the EU Emissions Trading Scheme begins - but will a mechanism for credits or allowances benefiting tropical forests be included?

## NEXT EVENTS NEXT ACTIONS

**November 3rd - November 4th**  
**UNESCO Pro-Natura International: “Carbon Biodiversity and Poverty in the Atlantic Forest” Forum, Curitiba (Brazil)**

**November 3rd - November 7th**  
**Climate 2008 / Klima 2008 online conference**

**November 3rd - November 7th**  
**FSC General Assembly, Cape Town (South Africa)**

visit [www.ForestsNow.org](http://www.ForestsNow.org)  
for live calendar of events



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