



# Climate Change: Financing Global Forests

Executive Summary



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This is an executive summary of the Eliasch Review,  
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# Executive summary

## 1. The scope, aims and approach of the Review

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The Eliasch Review is an independent report to government. It aims to provide a comprehensive analysis of international financing to reduce forest loss and its associated impacts on climate change. It does so with particular reference to the international debate surrounding the potential for a new global climate change deal in Copenhagen at the end of 2009.

The Review focuses particularly on the scale of finance required and on the mechanisms that can, if designed well, lead to effective reductions in forest carbon emissions to help stabilise greenhouse gases in the atmosphere and avoid the worst effects of climate change. It also examines how mechanisms to address forest loss can contribute to poverty reduction, as well as providing incentives to preserve other ecosystem services such as biodiversity and water services.

This Review draws on a large amount of previous research in the literature, responses to a stakeholder consultation exercise and visits to various countries including forest nations in Latin America, Africa and south east Asia. A range of new research and analysis was undertaken by the Review Team and commissioned for the Review from the following international organisations and institutes: AEA; Chatham House; Climate Strategies; CSERGE, University of East Anglia; Ecosecurities; IES; IIASA; IIED; Judge Business School, Cambridge University; LTS International; The Met Office, Hadley Centre; ODI; ProForest; the Royal Botanic Gardens, Kew; School of Biological Sciences, Plymouth University; and the United Nations Environment Programme, UNEP/WCMC.

## 2. Headline messages

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**Urgent action to tackle the loss of global forests needs to be a central part of any future international deal on climate change. A deal that provides international forest financing could not only reduce carbon emissions significantly, but also benefit developing countries, support poverty reduction and help preserve biodiversity and other forest services.** Forestry, as defined by the IPCC, produces around 17 per cent of global emissions, making it the third largest source of greenhouse gas emissions – larger than the entire global transport sector. In the tropics, it is estimated that an area of forest the size of England is cleared every year, and current annual emissions from deforestation are comparable to the total annual CO<sub>2</sub> emissions of the US or China.

If the international community does nothing to reduce deforestation, modelling for the Eliasch Review estimates that the global economic cost of climate change caused by deforestation could reach \$1 trillion a year by 2100. This is additional to the impacts of industrial emissions. Moreover, without tackling forest

loss, it is highly unlikely that we could achieve stabilisation of greenhouse gas concentrations in the atmosphere at a level that avoids the worst effects of climate change.

**This Review believes that an ambitious international climate change deal should aim to halve deforestation emissions by 2020 and make the forest sector carbon neutral by 2030 – with emissions from forest loss balanced by new forest growth.** Reducing deforestation rates significantly will require substantial finance. Nonetheless, even taking this into account, the net benefits of halving deforestation could amount to \$3.7 trillion over the long term.

**In order to achieve this, a global step change is needed in the way land is used and commodities are produced. Success will rest largely on action at the national level.** Demand for agricultural commodities and timber will continue to rise as the world population grows and becomes wealthier. National and international policies will need to shift the way demand for commodities is met away from deforestation and towards more efficient and sustainable methods that ensure forest nations and communities grow and prosper. Improvements in agricultural productivity and the sustainable management of forests will play a key role. Consumer countries can also provide incentives for sustainable production through preferential procurement of sustainably-produced products and increased consumer awareness.

**A central element in making this shift work will be the inclusion of the forest sector in global carbon markets. In doing so, the costs of reducing global carbon emissions will be reduced substantially, and lower costs will mean that a more ambitious overall emissions target will be possible.** The Review's analysis suggests that including deforestation and degradation (REDD) – and additional action on sustainable management – in a well-designed carbon trading system could provide the finance and incentives to reduce deforestation rates by up to 75 per cent in 2030. With the addition of afforestation, reforestation and restoration (ARR), this would make the forest sector carbon neutral.

In addition, the cost of halving global carbon emissions from 1990 levels could be reduced by up to 50% in 2030 and by up to 40% in 2050 if the forest sector is included in a trading system. This is due to the relatively low cost of forest abatement compared to some mitigation in other sectors. These lower costs could also allow the international community to meet a more ambitious global emissions target.

**Full global carbon trading will take time to evolve. Any system should meet the needs of countries at different levels of development, particularly the poorest. In the transition period from 2012, the Review recommends that forestry abatement is supported through a combination of finance from carbon markets and other sources from the public and private sectors.**

**For this to be successful, four building blocks will be needed:**

- **Effective targets dependent on baselines**

Emissions reductions should be measured against national baselines that provide incentives for action by countries with high historical deforestation rates as well as continued action by those with an effective track record of avoiding deforestation.

- **Robust monitoring and reporting**

While advances in measuring techniques mean that forest emissions can now be estimated with similar confidence to emissions estimates in other sectors, this will require substantial capacity building in many forest nations.

- **A well-designed mechanism for linking forest abatement to carbon markets; and additional funding from the private and public sector**

Forest abatement in developing countries needs to be matched with more stringent emissions targets for Annex I countries. Getting this balance right could reduce costs, attain a more ambitious global target, and maintain financial incentives for clean technology transfer to developing countries. The Review shows that, if properly designed, inclusion of the forest sector in the EU ETS should have little or no impact on the EU carbon market price. This would maintain incentives for EU investment in new clean technologies. However, a smooth transition that maintains price stability will mean that additional funding from sources outside carbon markets will be needed in the short to medium term. Under one scenario modelled by the Review, \$7 billion could be generated by the carbon markets in 2020 which would leave \$11-19 billion to be financed from elsewhere if deforestation were to be halved. Much of this may need to come from international public funding.

- **Strong governance and effective mechanisms for the distribution of finance**

National governments should take the lead in implementing a successful system to tackle deforestation. Clarifying and securing land tenure user rights, and strengthening institutional capacity at all levels, will be essential. Finance may be directed to national and regional levels, local projects or a combination. The full participation of forest communities will make reforms more likely to succeed and benefit the poor. To help promote transparency, countries may choose to manage carbon revenues through a special fund and should report on the policies and measures they have put in place to reduce the loss of their forests.

**In the very short term, developing countries will need substantial support for capacity building to prepare for entry into forest credit schemes. Estimates for this Review suggest that capacity building in 40 forest nations could cost up to \$4 billion over five years.** This will include three key areas: research, analysis and knowledge sharing; policy and institutional reform; and demonstration activities. If international funding from a combination of carbon markets and other sources is to be effective, the finance will need to be well managed and coordinated. The international community will need to agree on the proportion of finance from different sources. Several funds already exist or are planned, and there is potential for overlap and duplication. The UK should help mobilise international action, working with forest nations, major donors, the UN, World Bank and others to build a coordinated system of multilateral funding. This should build on, and draw together, current multilateral initiatives. Given the risks of climate change, the international community must act swiftly and decisively.

### 3. Recommendations

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Strong and urgent action to tackle forest loss is key to a comprehensive approach to tackling climate change. This Review recommends the following:

#### Finance

- The international community should aim to support forest nations to **halve deforestation by 2020 and make the global forest sector carbon neutral by 2030**. The international community should provide the necessary finance to meet these goals. A combination of international finance from carbon markets and other sources from the public and private sectors will be needed in the short to medium term.
- As a leading international donor, the UK **should make a significant financial contribution** to tackle global forest loss.
- The **forest sector should be fully included in any post-2012 deal at Copenhagen, with market access provided by emissions trading schemes**. This should be matched by stringent emissions reductions targets for Annex I countries and appropriate supplementarity limits on international credits. A linking mechanism between forest abatement and global carbon trading should be institutionalised as part of a wider global carbon market framework. The international community should agree on the **proportion of finance from different sources**.

#### Sustainable production

- Forest nations and the international community should undertake **research to better quantify land availability** at global, national and regional scales and determine the most effective country-specific policies for shifting to more efficient, sustainable production of commodities and timber. Policies could include improvements in agricultural productivity in the context of wider sustainability policies, use of idle land and sustainable forest management.
- Consumer countries should examine demand-side policies – for example, through **preferential procurement of sustainably produced products** and increasing consumer awareness, ensuring that this is compatible with WTO rules. This should provide incentives for forest nations to promote sustainable production.

#### Capacity building

- The international community should support forest nations in **urgent research and analysis** to provide more consistent and accurate data on current emissions from the forest sector.
- Countries with specific expertise in the forest sector should share their knowledge and expertise. In particular, **satellite technology and data management** should be made available to support poorer forest nations in measuring and monitoring changes in forest emissions. This will build capacity for countries to participate in financing mechanisms and provide transparency in reporting emissions reductions.
- Many forest nations will want to undertake policy and institutional reforms in order to

create a governance environment in which sustainable land and resource management is possible and profitable. Clarifying and securing land tenure and user rights will be an essential part of this. The international community should provide **urgent support for capacity building** where necessary.

- **Demonstration activities** will be needed to test new approaches and demonstrate how credit mechanisms can be used to make land use more efficient and sustainable, promote REDD and ARR and secure wider social and environmental benefits.
- **International public funds should be coordinated effectively**, avoiding a proliferation of competing mechanisms. The UK and EU should help mobilise international action. The UK Government should work with forest nations, European leaders, major donors, the UN, World Bank and others to build a coordinated system of multilateral funding. This should build on, and draw together, current multilateral initiatives such as FCPF, UN-REDD and FIP.

## 4. Chapter summaries

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### 1. Introduction

Climate change is a major global threat. As carbon emissions rise, so does the likelihood of significant damages to water resources, ecosystems and coasts, as well as the impacts on food supplies and health. To avoid the worst effects of climate change, we should aim to stabilise levels of atmospheric greenhouse gases at 445-490 parts per million CO<sub>2</sub>e or less. Achieving this global stabilisation target will require strong and urgent international action on a number of fronts – and forests will need to play a central role.

Forestry, as defined by the IPCC, produces around 17 per cent of global emissions, making it the third largest source of greenhouse gas emissions – larger than the entire global transport sector. Annual forest emissions are comparable to the total annual CO<sub>2</sub> emissions of the US or China. If we do not tackle deforestation, it is highly unlikely that we could achieve a CO<sub>2</sub>e stabilisation target that avoids the worst effects of climate change.

Forests also deliver additional ecosystem services such as regulating regional rainfall, flood defense, maintaining soil stability and supporting high levels of biodiversity. Many of these services are crucial for maintaining life and livelihoods, with 1.6 billion people depending on them for their welfare and livelihoods to some extent.

### 2. Forests, climate change and the global economy

Forests play an important role in regulating the earth's climate. Deforestation and forest degradation release stored carbon into the atmosphere as CO<sub>2</sub> emissions. The global forest sector produces an estimated 5.8 GtCO<sub>2</sub> annually. Deforestation is occurring rapidly in the tropics, where an estimated 13 million hectares – an area the size of England – are converted to other land uses each year. Deforestation in tropical regions generally emits significantly more CO<sub>2</sub> than forests elsewhere in the world.

Modelling for the Eliasch Review estimates that the global economic cost of the climate change impacts of deforestation will rise to around \$1 trillion a year by 2100 if unabated.



The total damage cost of forest loss for the global economy could be \$12 trillion in net present value terms. These costs are additional to climate change damage caused by emissions from other sectors.

### **3. The drivers of deforestation**

As long as the costs of lost forest carbon and other ecosystem services are not reflected in the price of the products supplied from converted forest land then, in financial terms, forests will often be worth more to landholders cut than standing. Social and institutional conditions operating in many rainforest nations, such as tax breaks and subsidies that encourage deforestation, can exacerbate the economic pressures placed upon forests by demand for timber and agricultural commodities.

The decisions of the developed world, such as whether they purchase non-certified timber and foodstuffs, are just as important a factor for driving deforestation. Biofuels targets could cause additional pressure for forest clearance, unless effective sustainability criteria are applied.

### **4. Sustainable production and poverty reduction**

A global step change is needed in the way land is used and commodities are produced if forest emissions are to be reduced. Our vision is a sustainable system of global production which can meet increasing demand for commodities and lead to reduced carbon emissions, better livelihoods for the poor and preservation of non-carbon ecosystem services such as biodiversity and water services.

This will require significant policy changes in three main areas. First, at the international level, we need to place a value on forest carbon in a new international deal on climate change. Second, at the national level, governance reforms are required to shift policy incentives towards sustainable production. And third, demand-side policies in consumer countries – for example, through preferential procurement of sustainably produced products and increased consumer awareness – can provide incentives for forest nations to promote sustainable production. The full participation of forest communities and indigenous peoples will make reforms more likely to succeed and benefit the poor.

### **5. The costs of mitigation**

This Review estimates that the finance required to halve emissions from the forest sector to 2030 could be around \$17-33 billion per year if included in global carbon trading. These results are based on various estimates from the literature and from work commissioned by the Review.

Further risk modelling commissioned for the Review provides new evidence of the benefits of taking firm action to reduce forest emissions. Reducing deforestation rates significantly will require substantial finance. Nonetheless, even taking this into account, the net benefits of halving deforestation could amount to \$3.7 trillion over the long term (net present value). This is based on the global economic savings from reduced climate change minus the costs involved. The benefits would be even greater if the preservation of other ecosystem services were taken into account.

## **6. A long-term framework for tackling climate change**

There are various mechanisms that could be used to achieve reductions in emissions from the forest sector in the long term, as part of an overall global framework. Of these, a system of cap and trade performs best against the criteria of effectiveness, efficiency and equity. Including reduced emissions from deforestation and degradation (REDD) in a global cap and trade system could reduce deforestation rates by up to 75 per cent in 2030. With the addition of sequestration from afforestation, reforestation and restoration (ARR), this would make the forest sector carbon neutral.

This would have additional benefits for the overall goal of stabilising global emissions. Due to the relatively low cost of forest abatement compared to mitigation in other emitting sectors, the cost of halving global carbon emissions from 1990 levels could be reduced by up to 50 per cent in 2030 and up to 40 per cent in 2050 if the forest sector is included in a global trading system. These lower costs could allow the international community to meet a more ambitious global stabilisation target. Forest carbon finance could also make a significant impact on reducing poverty through increased financial flows to developing countries.

## **7. The current international climate change framework**

The current international climate change framework is a long way from delivering the emissions reductions required for a global stabilisation target necessary to give the world a realistic chance of limiting global warming to 2°C. Further action will be needed from developed and developing countries to meet this goal. Institutional reforms will be needed to include forestry fully into a climate change framework post-2012.

## **8. Transition to a long term framework**

The post-2012 transition path towards a long term goal of global cap and trade will need to meet the needs of sovereign nations at different levels of development, particularly the poorest. The most effective transition path to global cap and trade is likely to be a national, incentive-based approach with increasing finance from emissions trading schemes, but also drawing on additional funding sources while carbon markets grow over time.

In the short term, the main objectives should be capacity building and filling the funding gap. Over the medium term, four building blocks are key: effective national-level targets; robust measuring and monitoring of forest emissions; a well designed system for linking forest credits to carbon markets and other sources of finance; and strong governance. In the long term, the goal should be full inclusion in a global carbon market.

## **9. Effective targets for reducing forest emissions**

The first building block in the transition is an effective system of targets that provide a baseline for issuing credits. A baseline-credit system for non-Annex I countries could initially generate credits for emissions reductions on a no-lose or limited liability basis. Effective targets for reducing forest emissions need to minimise leakage (a reduction in emissions in one area leading to an increase in emissions in another); ensure real reductions compared to business as usual (additionality); and incentivise action to retain or enhance standing forests.

Baselines should be set at the national level to prevent intra-national leakage. They should take account of a country's historical emissions rate and could also incentivise additional action to protect and enhance forest carbon stocks. This will help ensure that emissions reductions in the global forest sector are additional while acting against international leakage by being inclusive. Baselines should also change over time to help ensure additionality, by means of a renegotiation of baselines linked to an indicative trajectory.

## **10. Measuring, monitoring and verifying emissions from forests**

The second building block is robust measuring and monitoring of forest emissions reductions. National-level emission inventories need to be comprehensive and internationally consistent to enable verification of emissions reductions. Using appropriate techniques, forest emissions can be estimated with similar confidence to emissions estimates in other sectors. However, this will require substantial capacity building. The Review estimates that \$50 million will be needed for a sample of 25 forest nations to set up robust national forest inventories, with a further \$7-17 million needed for annual running costs in the following years.

## **11. Linking to carbon markets**

The third building block for tackling forest emissions in the medium term is a well designed mechanism for linking forest abatement to carbon markets and accessing additional funding from the private and public sectors as carbon finance grows. By finding the right balance in carbon markets between more stringent emissions targets and higher complementarity limits (the proportion of abatement effort that can be met from non-Annex I country credits), the international community could achieve several key objectives. First, fund significant forest abatement; second, reduce the cost of meeting more stringent global emissions targets; third, provide a strong incentive to invest in new clean energy technologies; and finally support a high level of technology transfer to the developing world.

The EU currently has the largest emissions trading scheme. This Review modelled various scenarios with different reduction targets and complementarity limits to examine the price impacts of including forest credits. The results suggest that if complementarity limits are set at 50% or lower in Phase III of the EU ETS, then admitting forest credits into the international credit market should have little or no impact on the EU carbon market price. This is because when restrictions on the use of non-Annex I credits are at this level, more costly EU abatement would still be necessary and would continue to set the price for all units of abatement in the carbon market. More important than the inclusion of forest credits will be the level of complementarity limit set for international credits in general into the EU market.

This Review also modelled the level of finance that carbon markets could provide for forest abatement in the medium term. One scenario modelled suggests that the global carbon market could supply around \$7 billion per year in 2020. This would leave a funding gap of around \$11-19 billion in 2020 for halving forest emissions (the range depending on the level of rent received by forest nations), which would need to come from other private and public sources.

During the transition to a comprehensive global cap and trade system, a linking mechanism could perform three important functions: aggregate funding from different sources; manage the risk of reversal of emissions reductions using credits placed in a reserve; and reduce the risk of investing in emissions abatement for forest nations. These functions could be performed by a single institution.

## **12. Governance and distribution of finance**

The fourth building block is strong governance and effective mechanisms for the distribution of finance to reduce forest loss. Sovereign nations need to take the lead in implementing a successful system to tackle deforestation. Key areas of reform include clarifying and securing land tenure rights and strengthening the institutional capacity of national, regional and local institutions. The full participation of forest communities will make reforms more likely to succeed and benefit the poor.

Many policy and programme options exist for reducing emissions from deforestation that do not require cash transfers to individuals. However some options will do so, including transfers to subsistence farmers and foresters. Such transfers will involve costs and capacity requirements which may be challenging for many forest nations in the short term. Capacity building and demonstration activities to test these approaches will be needed.

To help promote transparency, countries may choose to manage carbon revenues through a special fund and should report on the policies and measures they have put in place to reduce deforestation. Premium credits generated from programmes with voluntary higher standards that achieve wider social and environmental goals could be made available for preferential treatment in the market.

## **13. The funding gap and capacity building**

The international community needs to act urgently to tackle climate change and address the global loss of forests. In the short-term, many developing countries will require support for capacity building to prepare for participation in forest market schemes. Estimates for this Review suggest that capacity building in 40 forest nations could cost up to \$4 billion over five years. Some countries may be able to self-finance, while others may seek ODA support.

At the same time, a combination of international public and private finance will be needed to meet the medium-term funding gap as carbon markets grow. 'Pump priming' of credit mechanisms will be needed in the short term, using a mix of public and private funds. International public funds for this purpose should be coordinated effectively, avoiding a proliferation of competing mechanisms.

## **14. Conclusions**

Deforestation is progressing rapidly, particularly in the tropics. Firm and urgent action is needed. If not, it is highly unlikely that we can achieve a CO<sub>2</sub>e stabilisation target that avoids the worst effects of climate change.

Action on deforestation needs to be taken as part of the international negotiations under the Bali Action Plan towards a global climate change deal in Copenhagen, as well as in the wider context of goals on poverty reduction and the preservation of ecosystem services. A step change is needed in the way land is used and commodities are produced. A shift to more sustainable production will be complex and challenging, but not impossible if the international community acts together effectively.