

FORESTRY AND CLIMATE CHANGE

Front cover Oak (*Quercus*) seedling. With around 500 species, *Quercus* is the most widespread and numerous broadleaf tree genus. Its natural range is across the northern hemisphere and parts of the southern hemisphere, and the genus is represented in temperate, subtropical and tropical regions. (Photo: Laurie Campbell.)

FORESTRY AND CLIMATE CHANGE

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Foreword – the Global Forestry Challenge

On the 21 November 2006, some of the world's leading scientists and policy makers from the fields of forestry, climate change, biodiversity and bioenergy assembled for an international conference on forestry and climate change. The then Minister of State for Climate Change from the UK's Department for Environment, Food and Rural Affairs, Ian Pearson MP, gave an opening address which laid the foundations for discussions over the following 2 days on how to optimize the forestry sector's contribution. This Foreword is based on his speech which has been updated to reflect recent changes in the international climate change arena.

There is no bigger challenge in the world today than how we respond to the scientific evidence that our climate is warming – for which the human race is responsible. Climate change is not just an environmental issue – it is an economic issue, a social issue, a security issue and, above all, a moral issue. The publication of the Stern Report on the *Economics of Climate Change* destroys the economic argument that we cannot afford to reduce our emissions. Climate change, not action to tackle it, is the greatest threat to growth. The longer we wait, the harder and more expensive it will be. And the costs will be greatest for the developing world.

As the world's first industrialized nation, the UK has a moral responsibility to provide international leadership. Apart from alleviating starvation and avoidable disease, nothing is more important and urgent in the world today than securing international agreement on a long-term future framework, and the actions that are necessary to avoid dangerous climate change. Stabilizing the concentration of carbon dioxide and other greenhouse gases in the atmosphere will take enormous effort. There is widespread recognition that we will have to move substantially beyond the agreements reached at Kyoto in 1997. Our ambitions must be far greater and all key emitting nations must play a full part.

We will not meet this challenge without reducing emissions from deforestation. The future of the world's forests is central to the well-being of the human race and to the well-being of the planet. As we all appreciate forests are the world's 'lungs' and one of our best hopes for heading off dangerous climate change.

Forests support ecosystem services which, in turn, support mankind, providing food, shelter and medicines for the people who live in and near them. Such a precious resource should be guarded jealously, but that is simply not happening. Between 2000 and 2005, more than 7 million ha of forest were lost *every year* – an area the size of Sierra Leone or Panama. This scale of destruction contributes, according to Stern, more than 18% of global emissions, a share greater than is produced by the global transport sector. It destroys plants and species we've barely discovered, robbing mankind of potential medicines. It also causes hardship for many of those people who rely on these wonderful natural resources.

Only now are we beginning to understand what climate change could do to the world's forests and how forest ecosystems regulate local and regional climate. For example, recent research by the Hadley Centre has found that climate change could lead to a significantly drier climate in the Amazon Basin, causing extensive repercussions throughout the South American region.

The UK Government is leading work around the world to protect forest ecosystems and increase our understanding of the impact of climate change on them. The Darwin Initiative – funded by the UK Department for Environment, Food and Rural Affairs – is supporting forestry projects in many countries. For example, it funds the Global Canopy Programme in Malaysia which helps to build human capacity to conserve forest biodiversity. Another project, in Brazil, is quantifying the biodiversity of forests in Amazonia, assessing their value in terms of both ecosystem functions and carbon sequestration. This project will help inform how we can optimize meeting both biodiversity and carbon objectives.

The UK Department for International Development is also active in supporting sustainable forest management. A particular focus is on improving forest governance with a range of projects in Indonesia, Ghana and Cameroon. The UK is a significant donor to the Global Environmental Facility and, through this fund, has contributed to 29 forestry projects in Brazil, covering a range of issues from implementing international conventions and monitoring the effects of climate change to promoting biodiversity.

The UK is also working through the EU to take action and, in 2006, was a key supporter of new EU legislation to prevent illegally logged timber from being allowed into the EU. While all these efforts continue, awareness of the value of forests also needs to be raised – not just their role in mitigating climate change, but the goods and services they provide and their value to human livelihoods and well-being.

Sir Nicholas Stern's review clearly identified that curbing deforestation would be an effective way to reduce carbon emissions but, also, that there were significant economic benefits to local communities from managing their forests sustainably. Curbing deforestation will not be easy to achieve, as powerful socioeconomic forces are the cause of it in many countries. Workable solutions

that recognize this must be found. Genuine synergy is needed between land management objectives and local community involvement, at both national and international levels. The UK has worked actively with developing countries, with Germany who holds the Presidency of the G8, and with the World Bank, to secure agreement at the G8 Summit in Heiligendamm to support the development of a pilot scheme to test incentive-based mechanisms for reducing deforestation while maximizing the benefits for biodiversity, and for building capacity. The UK will continue to explore how we can mobilize international resources to help developing countries manage their forests in ways that help to reduce carbon emissions. One option to explore further is whether linking forest protection with carbon markets could provide more sustainable investment over the longer term. Deforestation policies should be shaped and led by the nations where forests stand, but there must be help from the international community. Of paramount importance is the need for an international framework for achieving sustainable forestry. COP12 in Nairobi in November 2006 saw all 189 parties to the UN Framework Convention on Climate Change working together on such a framework. These discussions are ongoing and there is growing confidence that an agreement on the way forward will be achieved at COP13 in Bali in December 2007.

In conclusion, the demands placed on the world's forests are great – and growing. Striking a balance between their protection and sustainable use, while increasing the share of benefits to the people who live in and around forests, poses many challenges. Such a solution is achievable and the prize is worth the effort – not just for the emissions reductions but also for the other livelihood, environment and biodiversity benefits. The UK has put enormous effort into the science of climate change and the climate change negotiations, including those elements of the agreement concerning forestry and land use. It is critical that we all continue to do our best to advance environmental sustainability in all these areas in the future.

This publication is timely in drawing together current thinking on how the global forestry community can respond to the threat posed by climate change. Through improving understanding of the social, economic and environmental factors that drive deforestation, effective proposals that inform action to reverse it can be developed and help us rise to the challenge of effectively countering climate change.

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I Introduction

‘Climate change is one of the greatest challenges we face – both in terms of its potential impacts on our societies and the earth, and in terms of the scale of the international co-operation that is needed to confront it.’ ‘The OECD and Forestry Commission have gathered together scientists from 16 countries, including those that have the largest forest areas, to discuss the contribution that the forestry sector can make to meet this great challenge.’

*The Rt. Hon. Lord Clark of Windermere
Chairman of the UK Forestry Commission
Tuesday, 21 November 2006, Wilton Park*

In Chapter 2 (Forests and Climate Change: the Knowledge-base for Action) and in the short introductions to the sections which follow, we have explained the logic and sequence of this book. We hope that Chapter 2 pulls out some of the key observations and provides a steer to where critical issues are set out in greater detail in the 26 chapters which follow.

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1

Personal Introduction by The Rt. Hon. Lord Clark of Windermere

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I would like to thank all those who travelled to Wilton Park to work on forestry and climate change. This really was a working conference, where many participants gave presentations, chaired workshops and assisted in reporting. The conference was organized by Forest Research, the Forestry Commission's research agency, on whom we depend so much, not only for scientific research but also for advice at all levels. Peter Freer-Smith, Mark Broadmeadow and Jim Lynch took the lead in organizing the meeting and in the production of the book inspired by this conference.

I would also like to thank OECD for co-sponsoring the conference. In the UK the subject of climate change was often headline news during 2006 and recently Sir Nicholas Stern's report *The Economics of Climate Change* (The Stern Report) has been published. Commissioned by the UK Government, this report highlighted an urgent need for action. Thus the timing for an OECD Conference on Climate Change and Forestry could not have been better. Climate change is a concern to governments and international organizations across the world, and this conference helped us to identify the part that forestry can play in addressing this important global concern.

I was very pleased to learn that OECD's Secretary-General, Angel Gurría, has been so supportive of Sir Nicholas's report, and has congratulated both our former Prime Minister Tony Blair and the former Chancellor of the Exchequer Gordon Brown for commissioning the study and for making it freely available. Secretary-General Gurría reminded us that the OECD has been pressing its member states to take action on climate change for many years, in particular, to look at more market-based solutions to deal with carbon emissions. He has told the UK Government that the OECD is very willing to contribute to the detailed action programme needed to tackle the potentially devastating consequences of climate change.

Climate change is one of the greatest challenges we face – both in terms of its potential impacts on our societies and the earth, and in terms of the scale of

the international cooperation that is needed to confront it. But a major barrier to the effective application of these policies, and their adoption in other countries, is a fear that they will negatively impact on a country's economic competitiveness. So if one country takes a lead will its competitors then benefit by continuing as they are?

I suspect that there is competitive advantage in good environmental practice, but we are only going to make a difference through collaboration, the sort of collaboration that we saw at Wilton Park in November 2006. The OECD and Forestry Commission have gathered together scientists from 16 countries, including those that have the largest forest areas, to discuss the contribution that the forestry sector can make to meet this great challenge. Let us not forget that although climate change is a potential disaster at a global scale that disaster will be played out locally, affecting communities and individuals. And the people most affected will be the people least able to cope – poor people in poor countries. So this is not a simple economic or scientific challenge, but is closely linked to international efforts to reduce poverty and promote stability and prosperity.

So where does forestry fit into all this?

- As the Stern Report tells us, deforestation accounts for just under a fifth (18%) of all the carbon dioxide released into the atmosphere.
- In the past 3 years the world has lost an area of forest that is greater than the area of the UK. If we use gross area cleared, rather than net area, then we can include Ireland, the Isle of Man and the Channel Islands as well!
- However, the story is not all bad and in some regions there is a very considerable expansion in forest cover, amounting to almost 4 million ha. From this I believe we can say that global forest decline is not inevitable, positive action will yield results. We can look to Asia for leadership here, where a net loss of some 800 000 ha a year in the 1990s has been turned into a net reported gain of 1 million ha a year for the past 5 years, primarily as a result of large-scale afforestation reported by China.
- When the public think of forestry, what probably comes to mind is an image of a tropical jungle, but more than half of the world's forest area is found in five countries (the Russian Federation, Brazil, Canada, the USA and China), of which only one is tropical.
- It is worth remembering that just ten countries account for two-thirds of global forest cover. So there is a possibility to act strategically. I suggest that we could see change come about in a surprisingly short time if we can go about things in the right way.

There is simply no argument that deforestation is currently concentrated in the tropical and subtropical regions. Does the developed world – for example the OECD member countries – have a role? There are many things that we can do.

- First, we can continue to make our industry effective and efficient. This means optimizing our use of raw material, increasing the efficiency of our operations, producing bioenergy in a variety of forms and perhaps expanding into biorefinery products where we substitute fossil fuel and feedstocks with

- renewable alternatives. By developing the competitiveness of our sector we will ensure both a commercial and environmentally sound future.
- We can demonstrate what can be done through best practice. For example, FAO reports that the forest products industry is itself a major consumer of energy, using 6% of total industrial energy. In my Department, the Forestry Commission, Tim Rollinson our Director General has established a project team to look in detail at the way that we use resources. He has asked them to give him recommendations for reducing our environmental footprint.
 - Globally the forestry and wood products sector is the only sector that already generates approximately 50% of its own energy needs, the majority from renewable carbon-neutral biomass. Energy costs, energy supply and climate change are intricately linked to the future of the forest products industry. But in addition to renewable energy let us also think about the potential of renewable products based on wood, in building especially but also packaging.

OECD countries generally, and I speak from detailed knowledge of UK forestry, have become expert at delivering sustainable forestry practice. We know how to translate theory into action and we know how to measure the impact of our activities and report on them – to tell society how we are progressing and back this up with independent verification.

Deforestation is driven mostly by social and political factors. Good governance, empowerment of the wider community of stakeholders in forest management, stability in forestry institutions are some of the areas where we can help. Can we make our forests too valuable to fell? Many of our pressing environmental problems would be reduced if we could overcome the dilemma where the environmental services that the human race depends on do not generate any tangible benefit – I mean money – for the stewards of those services. I was struck by a recent FAO report on the value of forests, where the authors said that if the true value of forests was properly understood then governments would think that they were too valuable to clear. We are starting to see some developments here. For example our co-sponsors, OECD, strongly support the development of market-based approaches such as markets linked to carbon emissions, and this is a step towards monetizing the previously untraded benefits from forests.

Environmental regulation can be a powerful force in driving innovation, and there is a surprising consensus on this. The Stern Report recommends a combined approach of environmental regulation and taxation to drive forward innovation and resource efficiency through market forces. There are already very good international networks in all branches of the forestry and wood products sector covering policy, science and practice. And there is probably a lot more science going on than we realize. In the Forestry Commission we recently estimated that through its Agency, Forest Research, the Commission is spending about a million pounds (2 million dollars) every year on research that is directly relevant to climate change. Surely there is scope for greater collaboration in this area, in Europe and more widely, so that we can get the greatest leverage from this activity; I would be very pleased to see proposals for how we can help encourage this.

This conference focused on how the forestry sector needs to respond to the current understanding of climate change with new policies and with innovative practice. This is not an easy task. Forestry does not operate in a vacuum, so an integrated and holistic approach is needed. This is a challenge because current international and national arrangements have evolved in such a piecemeal way over the years. The meeting focused particularly, of course, on the responses required in OECD countries. This means an emphasis on temperate and boreal forest systems but in the context of global concerns and international policy. Our science agenda surely must be about the global ecosystem and concerned as much with the future as with the present.

I finish by again thanking all those who came to Wilton Park. If the conference and the proceedings in this publication make even a very small contribution it will be immensely worthwhile, and we will be thanked in times to come.