



UNECE



FAO

FORESTS AND CLIMATE CHANGE

Background document for the European Forest Week

Summary

As mentioned in ECE/TIM/2008/2, this paper has been prepared to present the linkages between forests and climate change and possible responses of the forest sector to emerging climate change challenges and opportunities, and to highlight questions for discussion the European Forest Week's plenary session on forests and climate change on Tuesday, 21 October, in Rome. Participants are invited to participate actively in the discussion. They may wish to focus their interventions on the questions presented in section VII.

I. INTRODUCTION

1. "Forests and climate change" was chosen as the theme of the first plenary of European Forest Week, because of the complexity and long term nature of the challenges, the need for an intersectoral and international approach, and ongoing negotiations under the UNFCCC¹, the results of which will influence the operating environment for the forest sector for the next decades. Increasingly, the climate change negotiations are also recognizing the important role of forest-related issues, whether in the context of forest degradation or land use change. Decision makers, public and private, stand to benefit from lively and well informed debate at the international level to enable them to make the best possible decisions. The objective of this paper is to provide relevant background information and ideas to stimulate a high quality discussion by the panellists and the participants.²

II. BACKGROUND

2. Forests account for nearly 20% of anthropogenic greenhouse gas emissions, mostly through tropical deforestation in countries not included in Annex 1 of the Kyoto Protocol. However forests remain one of the few ways in which carbon may be sequestered from the atmosphere. Forests in Europe, including Russia, stock 53 billion tonnes of carbon. The carbon stock of the forest of EU27 is about seven times larger than the annual greenhouse gas emissions of the region. The annual increase in carbon stock of these countries from woody biomass is equivalent to about one tenth of the emissions. This increase is due to the fact that in almost all countries,

1 The first commitment period of the Kyoto Protocol (2008-2012) began this year. Intensive deliberations on the post-2012 arrangements were launched in December 2007 at the thirteenth Conference of the Parties (COP13) of the United Nations Framework Convention on Climate Change (UNFCCC), and are expected to be completed at COP15 in Copenhagen in December 2009.

2 Deliberations on the post-2012 climate change regime leading up to a decision anticipated to be taken at COP15 in Copenhagen in December 2009 are being carried out under two bodies: the Ad Hoc Working Group on Long-term Cooperative Action (AWG-LCA) and the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol ([AWG-KP](#)), as well as SBSTA and COP.

harvests of wood are well below the net annual increment of the forests. However, carbon emissions from forests from fire, storms, insect infestations and forest dieback (e.g. as is occurring in the Russian Federation) seem to be increasing, thus reducing the positive net carbon balance of the region's forests. The wood harvested from the forests is used for raw material and energy, often replacing more carbon intensive materials or fossil fuels. Thus forests contribute to greenhouse gas mitigation through conservation, sequestration and substitution of carbon. However, as the carbon flows linked to forests are very different in nature from those linked to energy use, they are only partly taken into account in the present climate change regime. This, may well change in the post-Kyoto period, starting in 2013.

III. IMPACTS OF CLIMATE CHANGE ON EUROPE'S FORESTS

3. Forests do not only contribute to climate change mitigation, they are vulnerable to climate variability and climate change. The Fourth Assessment Report (AR4)³ of the Intergovernmental Panel on Climate Change (IPCC) concludes that global greenhouse gas (GHG) emissions are expected to continue to grow over the next few decades. It indicates that likely impacts of climate change in Europe include an increase in flash floods and coastal flooding throughout the region, more frequent and prolonged droughts and increased risk of wildfires. There is a high risk of a dramatic increase in wildfires in the Siberian peatlands. Mean annual precipitation is projected to increase in the North and decrease in the South. Significant warming, greater in winter in the North and in the summer in southern and central Europe, is expected. Southern and central Europe are likely to experience water stress.

4. According to AR4, climate change could result in the expansion of forests in the North and their retreat in the South of Europe. Forest productivity and total biomass is expected to increase in the North, including in Russia, and in higher elevation forests, and to decrease in central Europe. Forest mortality is likely to increase in the South. Changes in species' ranges are expected. Native conifers are likely to be replaced by deciduous species in western and central Europe. IPCC concludes that large percentage of European flora is likely to become vulnerable, endangered or headed for extinction by the end of the century. Mountain areas are particularly vulnerable; they could lose up to 60% of their plant species under high emissions scenarios.

IV. FORESTS AND THE INTERNATIONAL CLIMATE CHANGE REGIME

5. Most European countries, as well as other ECE member countries, have ratified the UNFCCC and thus have agreed to undertake climate change mitigation and adaptation actions and to report periodically to UNFCCC. Almost all UNECE member countries have ratified the Kyoto Protocol. Most of them are so-called Annex I Parties (i.e. industrialized countries or countries in economic transition) that have assumed quantified emission reduction commitments under the Kyoto Protocol.

6. Emission reduction commitments under the Kyoto Protocol vary considerably among European countries and other ECE members. For example, the EU15 has a total aggregate emission reduction target of -8%, but within this country commitments range from -28% (Luxembourg) to +27% (Portugal).

³ <http://www.ipcc.ch/>

7. Many countries in the region have made formal emission reduction commitments that are greater than their Kyoto commitments and intend to make yet deeper emissions cuts in the future. For instance, the EU's objective is to keep the global average temperature increase below 2⁰C compared to pre-industrial levels. In the 2007 Spring Council, the EU Heads of State and Government unanimously agreed to reduce its GHG emissions by at least 20% by 2020, and, in case of global and comprehensive agreement, by 30% by 2020, and called for a global reduction of up to 50% by 2050 compared to 1990 levels.

Forests and climate change mitigation in Europe

8. Europe's forests are a large net sink, thus contributing to climate change mitigation. According to the "State of Europe's Forests 2007", between 1990 and 2005 the area of Europe's forests increased by 13 million hectares and the growing stock increased by 358 million m³. Europe's forest biomass carbon reserves are huge and increasing; 53 gigatonnes of carbon are stored in Europe's forest biomass -- an increase of 2 billion tonnes since 1990, and substantial additional amounts are stored in forest litter and soils. Europe's forests are also important sources of wood that can substitute more carbon-intensive materials and fossil fuels.

9. European countries, as other Annex 1 countries, include afforestation, reforestation and deforestation in their net emission reduction accounting to meet their commitments under the Kyoto Protocol (Article 3.3) and can opt (under Article 3.4) to use "additional LULUCF activities" -- including forest management, cropland management, grazing land management and revegetation -- to help meet their targets. Nineteen European countries have opted to include forest management in their emissions accounting.

10. Considerable attention has been paid in Europe to the role of harvested wood products to climate change mitigation. The carbon storage function of wood products is not accounted for in the first commitment period of the Kyoto Protocol, but there is a possibility of including them in the post-2012 arrangements. This was the topic of the recent workshop, "Harvested Wood Products in the Context of Climate Change Policies (Geneva, 9-10 September 2008), whose findings will be discussed at the policy dialogue on 21 October.

11. In order to help Member Countries meet their emission reduction commitments, the European Union established the first mandatory trading system for GHG emissions -- the EU Emissions Trading System (ETS), which has been in operation since January 2005. Participating installations can sell emissions rights if they achieve reductions below their assigned pollution levels, or buy them if they are unable to make the required reductions. Carbon credits from the land use, land use change and forestry (LULUCF) sector, including from Joint Implementation (JI) and Clean Development Mechanism (CDM) projects, are excluded from ETS. Whether they will be eligible in the post-2012 arrangements remains to be seen. This decision could have a significant impact on forest management in non-Annex 1 countries..

12. Although forestry projects in the Kyoto-compliant markets are extremely limited, forestry has found favour in the rapidly growing voluntary carbon market. As of mid-2007, forestry projects accounted for the largest share -- about 36 percent -- of the carbon credits sold on the voluntary carbon market.⁴

⁴ K. Hamilton, R Bayon, G. Turner and D. Higgins. 2007. State of the voluntary carbon market 2007 -- picking up steam . Ecosystem Market Place and New Carbon Finance. July 17, 2007. <http://www.ecosystemmarketplace.com/documents/acrobat/StateoftheVoluntaryCarbonMarket17July.pdf>

Reducing emissions from deforestation in developing countries

13. Forestry's role as a potentially important mitigation option has given forests a prominent place in climate change negotiations and placed them on the agendas of recent high level political fora. According to IPCC's AR4, "forestry" accounts for 17.4 percent of global greenhouse gas emissions, a majority of which derives from deforestation in developing countries. Developing countries, by reducing deforestation and forest degradation, can play a major role in climate change mitigation, provided they are offered incentives to offset the opportunity costs. Policy discussions on REDD, including the issue of financial incentives, are under way as part of the Bali Action Plan, adopted at COP13 as the process of negotiation leading to agreement at COP15 on the post-2012 arrangements under UNFCCC.

Forests and climate change adaptation

14. In 2006, UNFCCC adopted the *Nairobi Work Programme on Impacts, Vulnerability, and Adaptation to Climate Change*. The plan addresses many topics including climate data and modelling, adaptation tools and methods, climate variability and extreme events, and economic diversification.

15. In June 2007, the European Commission adopted its first policy document on adapting to the impacts of climate change: "Green Paper on adapting to climate change in Europe – options for EU action".⁵ It indicates that forests are likely to be impacted by reduced water availability, wind damage, higher temperatures, increased bushfires and greater disease pressure, as well as increased landslides. The Green Paper points out that the maintenance of healthy ecosystems that are more resilient to climate change lies at the centre of any adaptation policy. "Conventional" pressures that cause fragmentation, degradation, over-exploitation and pollution of ecosystems must be reduced. Implementation of existing EU legislation and policies in sustainable forest management will provide a firm foundation for climate change adaptation, although it is recognized that policies may need further adjustment to address adaptation needs. The Green Paper calls for climate change adaptation to be integrated into existing and future legislation, policy responses and funding programmes.

16. Forest management measures that countries could take to facilitate climate change adaptation include favouring forest varieties and species that are adapted or adaptable to new climatic conditions, implementing forest management practices that reduce vulnerability to both incremental climate change and to extreme events such as storms and fires; intensifying fire management systems, and undertaking various in-situ and ex-situ conservation measures, and introducing spatial plans and corridors to help species migrate.

V. TRANSLATING INTERNATIONAL COMMITMENTS TO REGIONAL AND COUNTRY ACTION

17. Given the high political profile of climate change issues, and the fact that carbon sequestration in European forests could in some circumstances offset emissions from fossil fuel use and other GHG emissions, it is not surprising that climate change considerations are now at the centre of national, regional and global forest policy debate. At the regional level, several

⁵ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52007DC0354:EN:NOT>

major forest related instruments for the EU address climate change, as do several MCPFE commitments, and the ECE/FAO Strategic Plan assigns highest priority to issues of climate change and energy. This mirrored at the global level, for instance in the framework of the CPF. Some of these measures are listed in the annex.

18. The negotiation of the post-2012 climate change regime takes place in the context of the UNFCCC, but those responsible for forest management and forest sector policy are adapting to the changing circumstances. In so doing, they face a major challenge of taking account of imperfectly understood phenomena with complex, very long term repercussions, superimposed on existing major forest sector issues. An aggravating circumstance is the difficult communication between the forest sector policy makers and those responsible for developing climate change policy. Some climate change instruments, including the Kyoto Protocol, with significant consequences for the forest sector were developed with relatively little input from forest sector specialists.

VI. CONCLUSIONS

19. Climate change brings new challenges and opportunities to the forestry sector in Europe. It is essential that forestry institutions are fully engaged in national and international discussions regarding forests and climate change mitigation and adaptation, and that climate change considerations are fully integrated into forest sector policy making. Furthermore the “rules of the game” for climate change (emission trading, carbon price, accounting systems, etc.) are still evolving. Policy makers face an unusual degree of uncertainty and risk.

20. There are strategic choices to be made, as there are tradeoffs between different approaches: for example, increasing harvests to produce more wood energy will reduce the forest’s capacity to sequester carbon, and more intensive forest management, whether for carbon sequestration or wood production, could conflict with measures to conserve biodiversity.

21. Forest-related efforts in climate change mitigation and adaptation can produce significant co-benefits in terms of ecosystem services and livelihoods support, but may have negative environmental and social side effects if poorly designed.

22. Forest-related adaptation and mitigation measures need to be integrated into national forest programmes, to address intersectoral linkages (i.e. forestry-agriculture, forestry-energy) and to take into consideration global trade and financial mechanisms (e.g. as relates to REDD).

23. European and other ECE countries, as members of UNFCCC, have committed themselves to assisting developing countries meet the challenges of climate change. This includes technical and financial assistance to undertake adaptation measures, explore mitigation options, including reducing emissions from deforestation and forest degradation, and fulfilling their reporting requirements under UNFCCC.

VII. DISCUSSION ITEMS FOR THE PLENARY SESSION

24. There are many and complex climate change related choices facing policy makers, forest owners and managers, forest industries and stakeholders in Europe and North America. The plenary session is intended to help all these groups by promoting exchange of ideas and information between countries and between “communities” who often do not communicate with

each other, and may even have conflicting viewpoints. To focus the discussion at the plenary session, participants and panel speakers may wish to address the following questions:

- How should climate change mitigation and adaptation measures/programmes be integrated into forest sector policy, including national forest programmes and *vice versa*?
- How could forest management strategies be modified to reduce forests' vulnerabilities' to climate change?
- How can better coordination and communication between climate change negotiations and forest sector policy issues be achieved at the national, regional and global levels?
- What do countries expect from FAO, UNECE and MCPFE in the context of forests and climate change? For ECE/FAO, some of the issues and proposals are set out in ECE/TIM/2008/7/Add.1 FO:EFC/08/07/Add.1.

RELEVANT INTERNATIONAL INITIATIVES

Regional Forestry Cooperation Related to Climate Change

1. According to the most recent EU report to the UNFCCC submitted in 2006, “the development of dedicated measure for carbon sequestration, including afforestation and reforestation, has been slower than expected.⁶ It also highlighted the need within the region to evaluate the impacts of climate change on forest ecosystems and develop measures to adapt to those impacts.

2. At the regional level, EU policies and plans provide a framework for forestry policy responses and cooperative programmes related to climate change, as follows:

- The EU Forest Strategy (2005) makes explicit reference to the role of forests as carbon sinks and reservoirs, asserting that climate change strategies may be achieved through the protection and enhancement of existing carbon stocks, the establishment of new carbon stocks and the promotion of the use of biomass and wood-based products.
- The EU Forest Action Plan (2006) for sustainable forest management includes as a key action to facilitate EU compliance with the UNFCCC and Kyoto Protocol obligations on climate change mitigation and to encourage adaptation to the effects of climate change. It also promotes as a mitigation measure the use of forest biomass for energy generation as a substitute for fossil fuels.
- The Fifth Ministerial Conference for the Protection of Forests in Europe (Warsaw, November 2007), addressed forests and climate change as an issue for enhanced collaboration in the region. European countries, through the Warsaw Ministerial Declaration and two Warsaw resolutions commit themselves to ensure that forests and their sustainable management play an active role in climate change mitigation and adaptation and in this regard to further develop Pan-European guidance for afforestation and reforestation; promote research on forests and climate change, strengthen collaboration of MCPFE and UNFCCC, and support the objectives of mitigating climate change and increasing security of energy supply. The MCPFE has developed a common approach to national forest programmes (nfps). It will be critical to integrate climate change concerns into nfps, rather than developing forests and climate change strategies independently, to assure that mitigation and adaptation actions are consistent with countries’ goals and programmes in support of SFM.
- The Action Plan for Forest Law Enforcement, Governance and Trade (FLEGT), aimed at the eventual elimination of imports into the EU of illegally harvested timber, can contribute to reduced deforestation and forest degradation in countries outside the region, which in turn will have climate change benefits.
- Various European initiatives related to forest fires and natural disasters provide both climate change adaptation benefits. These include the European Forest Fire Information

⁶ European Commission, 2006. Fourth National Communication from the European Community under the UN Framework Convention on Climate Change (<http://unfccc.int/resource/docs/natc/eunce4.pdf>)

System; an EC scheme to develop preventative activities against fires; and the EU Solidarity Fund, which, among other things, provides support for the restoration of forestry production potential following natural disasters and fire.

- The 2003-2006 Forest Focus programmes include studies on predicting changes in forest growth, carbon stocks and tree species migration. Support is provided to EC-wide forest and soil monitoring programmes. Forest Focus encourages harmonized, broad-based, comprehensive and long-term monitoring of European forest ecosystems, concentrating on protecting fires against air pollution and fire. Monitoring of factors related to climate change adaptation and mitigation are to be developed.

3. The EU working group on Forest Sinks has for many years facilitated information sharing and consolidated EU positions and regional coordination in LULUCF negotiations in UNFCCC.

Recent International Initiatives

4. There have been dozens of conferences and workshop related to forests and climate change over the past two years. Results of two recent workshops will be presented at European Forestry Week, and are expected to contribute to the climate change discussions:

- The Pan-European Workshop on “Forests in a changing environment” organized by the Government of Finland in Koli, Finland from 3-5 September.
- Workshop on Harvested Wood Products in the Context of Climate Change Policies, which was organized by the Swiss Confederation Federal Office for the Environment, ECE/FAO Timber Section, MCPFE Liaison Unit in Norway, and the Technical Research Centre of Finland, and was held from 9-10 September 2008 in Geneva.

5. The results of two other international conferences may also contribute to the discussions:

- The "International Conference on Adaptation to Forest and Forest Management to Changing Climate with Emphasis on Forest Health: A Review of Science, Policies and Practices, co-organized by FAO, the Swedish University of Agricultural Sciences and the International Union of Forest Research Organizations, held in Umea, Sweden from 25-28 August 2008.
- The International Conference "Role of Forests in Climate Management: Research - Innovations - Investments - Capacity Building" organized by the Federal Forestry Agency of Russia and various other partners, including FAO, will take place on October 4-7, 2008 in Saint-Petersburg, Russia.

6. The Collaborative Partnership on Forests, of which FAO is the Chair, is undertaking various activities related to forests and climate change. These include the following:

- Preparation of a Strategic Framework for Forests and Climate Change, aimed at fostering a coordinated forest sector response to the climate change agenda, which will be presented initially at COP14.

- Under the leadership of the IUFRO-led panel on Adaptation of Forests to Climate Change is preparing an assessment of current knowledge of forests and climate change impacts, adaptation measures and policy options as input to the eight session of UNFF in April 2009
- Under the leadership of CIFOR, CPF is organizing “Forests Day” on 6 December 2008 in conjunction with UNFCCC’s COP14 to highlight the roles of forests in climate change.

7. FAO has been involved in forests and climate change for many years, and has a dedicated staff and programme in this field. Major current thrusts of the FAO’s forests and climate change programme are the following:

- Supporting REDD initiatives, including technical support to countries for “REDD-readiness”, assistance in the development of methodologies, and technical support to the SBSTA deliberations.
- Developing ‘good practice’ guidelines for integrating climate change into countries’ nfps and increasing knowledge and information sharing on countries’ related experience (The book, “Integrating climate change in forest policies and legislation” will be published in late 2008).
- Carrying out regional analyses of the issues related to forests and climate change
- Providing information to help countries understand better carbon market opportunities for the forest sector (publication “A systematic approach to accessing carbon finance in the forest sector: Making the step from carbon to cash” to be released in late 2008)
- Developing good practice guidelines for integrating climate change considerations into forest management plans
- Awareness-raising and information on forests and climate change mitigation and adaptation and links with SFM