



MCPFE Working Group on “sustainability criteria” for forest biomass production, including bioenergy

REPORT OF THE MCPFE OPEN-ENDED AD-HOC WORKING GROUP ON “SUSTAINABILITY CRITERIA” FOR FOREST BIOMASS PRODUCTION, INCLUDING BIOENERGY

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1. Introduction

The establishment of the *Open-ended Ad-hoc Working Group on “sustainability criteria” for forest biomass production, including bioenergy* (WG) was decided at the MCPFE Expert Level Meeting held in Oslo on 7-8 May 2008, as a follow up of Warsaw Ministerial conference in November 2007. The Terms of Reference for the WG (Appendix 1) was adopted at the MCPFE Expert Level Meeting, held in Geneva on 12-13 November 2008. Sweden kindly offered to facilitate the process and has had a leading role in the work of the WG.

The WG has met three times, in Rome, Italy on 22 October 2008, Vaduz, Liechtenstein 18-19 February 2009, and Uppsala, Sweden 11-12 June 2009. Minutes from the meetings are attached in Appendix 2. More information on meetings, presentations and discussions, can be found at www.mcpfe.org.

The WG was initiated in response to new developments and other processes addressing sustainability of biomass production, notably the emerging focus on the role of forests and sustainable forest management related to climate change and energy. Of particular relevance was the development on the promotion of use of energy from renewable sources by the European Community and the sustainability criteria developed for this purpose. Both sustainability criteria (article 17) in the approved Directive of the European Parliament and the Council on the promotion of the use of energy from renewable sources [Directive 2009/28/EC], and its reference to an analysis by the European Commission by 31 December 2009 on “requirements for a sustainability scheme for energy uses of biomass, other than biofuels and bioliquids” (Article 17.9), were seen to pose possible problems from a forest point of view. The Directive, with its reference to potential extension to biomass for energy and electricity, is hereafter referred to as the Renewable Energy Directive.

The elaborations in the WG were based on two analyses of MCPFE tools in relation to new demands. Ms. Hillevi Eriksson, Swedish Forest Agency, produced and revised an analysis of MCPFE tools for sustainable forest management in relation to new demands for sustainable production of biomass for energy through the sequence of WG meetings. The final version of this analysis is attached (Appendix 3, with annexes). In addition, a consultancy on feasibility assessment of using MCPFE tools for public procurement policies and sustainability requirements in the Renewable Energy Directive, by Mr. Jari Parviainen, Finnish Forest Research Institute, provided input to the discussions at the third meeting (Appendix 4).

This report summarises and concludes the work by the WG. Chapter 2 presents a summary of the assessment of existing MCPFE tools for sustainable forest management in relation to new demands for sustainable production of woody biomass, as well as recommendations from the WG on refinements and developments in the MCPFE tools for sustainable forest management.

The WG did also discuss challenges faced by the MCPFE and its signatory countries in communicating the MCPFE policies and tools for sustainable forest management with the broader society. Finally, the WG debated concerns raised about the Renewable Energy Directive. Summaries of the elaborations on these issues are included in Chapter 3.

2. Assessment of the MCPFE tools for sustainable forest management in relation to new demands for sustainable production of woody biomass and proposals for possible improvements of the tools

2.1 Relevant developments and processes addressing sustainability of biomass production

The Renewable Energy Directive was the immediate reason for the establishment of the WG, and therefore this process received specific attention. Also developments in public procurement policies in Europe were assessed relative to the MCPFE tools. A range of other processes addressing sustainable production of biomass, including for energy, were also identified. More

information on relevant processes is presented in Appendixes 3 and 4.

2.2 Analysis of the applicability and need for updates of the existing MCPFE tools for sustainable forest management

The WG analysed the applicability and need for updates of the MCPFE tools in relation to relevant developments and processes. The investigations and discussions by the WG were based on the gap analysis developed by Sweden (Appendix 3) and the feasibility assessment of using MCPFE tools for public procurement policies and sustainability requirements in the Renewable Energy Directive (Appendix 4).

The MCPFE has developed a range of tools for sustainable forest management. Prominent among the existing MCPFE tools are the general guidelines for the sustainable management of forests in Europe, the general guidelines for the conservation of the biodiversity of European forests, the criteria and indicators for sustainable forest management, the pan-European operational level guidelines, the pan-European guidelines for afforestation and reforestation, and the MCPFE approach to national forest programmes in Europe.

The current guidelines are mainly prescriptive and deal mostly with forest management. An exception is the afforestation/reforestation guidelines which relate also to broader land-use and landscape level issues. The six criteria for sustainable forest management describe preferred directions of developments, while the indicators serve to monitor central dimensions within these thematic elements. The criteria and indicators deal partly with broader forest sector issues. Both the guidelines and the criteria and indicators have served as a basis for developing standards for certification at national/sub-national levels.

A basic question related to potential revisions of or additions to the MCPFE tools is the comprehensiveness of responses to new demands. The increasing demands for renewable energy and potential implications of this for the concept of sustainable forest management are related to the current content in the MCPFE tools. The Renewable Energy Directive and public procurement policies, on the other hand, focus on “sustainability aspects” at product level. This product versus process approach was identified as an essential and underlying divergence between new and emerging processes and the established MCPFE tools. The Directive also applies to biomass produced outside the pan-European region, and hence go beyond the current scope of MCPFE tools. Further, the Renewable Energy Directive and existing public procurement policies require verification of “sustainability”, or evidence of compliance, which are outside the current procedural elements of the MCPFE tools.

Refinements and/or developments of current MCPFE tools can therefore be more or less substantial, and can be within the existing frame (i.e. guidelines, quantitative and qualitative indicators, additions or specification of elements in national forest programmes) or be new – in content (e.g. add new climate change relevant issues) or in form (e.g. how to serve verification of sustainability). Four interlinked aspects were identified based on the background papers for the third WG meeting (appendixes 3 and 4):

- (1) The foreseen increased demand for renewable energy, raises the questions if current MCPFE tools are sufficient to ensure sustainable management of forests in Europe in the case of, for example, more intensive utilisation at certain sites (whole tree harvesting, harvesting of stumps, more use of fertiliser, other tree species, etc), or whether these developments call for changes in the tools, possible directions, etc.
- (2) The new demands for verification of sustainability in e.g. the Renewable Energy Directive and public procurement policies, raise questions of whether existing MCPFE tools serve this purpose at national and European levels and how the verification can be promoted, any needs for changes e.g. in national standards or others. Related to this is the question of needs for refinements or additions in communication measures at European and national levels to ensure that the tools serve these purposes.

(3) The new attention and increased awareness to the role of forests in carbon budgets, for climate change mitigation as well as necessary adaptation raise the questions if current tools contribute with the necessary information (indicators) and prescriptions (guidelines) on these aspects.

(4) Connected to points 2 and 3 are also the questions of broadening the scope of the existing tools, to broader land management issues and/or to the product level (e.g. life cycle analyses) and the processing chain/stages.

As mentioned above, appendixes 3 and 4 provided the main background for the discussions of how the MCPFE tools correspond to new demands in processes and developments dealing with sustainable production, and readers are further referred to the full reports. In short, the gap analysis by Sweden (Appendix 3) highlighted five thematic areas of potential threats related to increasing demands for biomass for bioenergy: forest biodiversity, soil and water quality, climate mitigation efficiency, other services and goods, and increased risk of forest damage. To facilitate discussions in the third meeting of the WG, a suggestion of pan-European guidelines for climate change adaptation and mitigation in forest management and a suggestion of MCPFE recommendations for generally applicable minimum requirements on sustainable forest management, with a special focus on bioenergy and climate mitigation, was provided, cf Appendix 3, Annexes 1 and 2 respectively. The members of the WG did not support any development of new guidelines, while possible development of minimum requirements on specific elements was considered as one alternative for further development of MCPFE tools for sustainable forest management (cf. chapter 2.3).

Likewise, the feasibility assessment of MCPFE tools related to public procurement policies and the sustainability requirements in the Renewable Energy Directive (Appendix 4) highlighted climate and energy relevant elements, and possible refinements in existing MCPFE tools on these elements to better communicate with the public. Also, requirements concerning verification of performance as an emerging issue in processes dealing with sustainability, and possible MCPFE responses to this, were highlighted.

2.3 Recommendations from the Working Group on refinements/developments of instruments for sustainable forest management

In the WG discussions a major concern was problems and disadvantages connected to diverse requirements for different end-uses of forest resources. Specific requirements for different end-uses are likely to create problems given the integrated production chains for woody biomass, i.e. wood used in mechanical wood processing, for pulp and paper, and for energy through complex phases and product flows. Also, the need to promote equal competition between biomass from forests and from other sources was reiterated.

The WG emphasised that any recommendations on refinements and developments in MCPFE tools should take into account new knowledge and changes in attention. Any refinements and developments should also take into account the principles guiding the improvement of MCPFE indicators, during 2001-2003, namely political relevance for MCPFE and other initiatives, visible significance, data availability, cost-effectiveness, technical feasibility, and reliability. In line with the working procedures of the MCPFE, changes in the tools should be conducted in a process with broad participation. So while urgency was highlighted by the WG, proper procedures for suggesting and deciding on refinements and developments in the tools were stressed.

A final introductory remark to the recommendations from the WG concerns other developments and decisions scheduled for 2009 that may be relevant for possible developments in MCPFE tools. This include the outcome of the MCPFE external review and any recommendations from the MCPFE working group on exploring the potential added value of and possible options for a legally binding agreement on forests in the pan-European region. The WG also highlighted that any decisions on treatment of forests and land-use by the United Nations Framework Convention

on Climate Change, UNFCCC, in Copenhagen in December 2009 may change the political environment in which the MCPFE operate.

The recommendations from the WG, elaborated at the third meeting, in Uppsala, Sweden in June 2009, and agreed through subsequent e-mail correspondence among meeting participants, are as follows:

The Pan-European tools for SFM provide an appropriate generic framework for potential verification of sustainable forest management, although in this context they do have to be supplemented by new elements. Based on the background papers and the discussions, no severe gaps were identified in the tools of the MCPFE regarding sustainable forest management related to new demands, including for sustainable production for woody biomass. However, in spite of the broad acceptance and support of the MCPFE tools, the non-binding status of the tools was identified as an issue for them being used by regulatory processes and institutions. The MCPFE tools for sustainable forest management should be refined and further developed in order to better meet the new requirements, such as climate change issues, wood based bioenergy, and various forest services. Any refinements shall build on former work and existing processes and any duplication of work should be avoided. The following text forms a set of recommendations for consideration by the MCPFE Expert Level Meeting, November 2009.

I. VERIFICATION OF SUSTAINABLE FOREST MANAGEMENT

- The need for developing and/or updating the MCPFE tools to serve as a basis for performance level and verification of sustainable forest management has been identified. The tools and their national application could be further developed to be applicable as basis for verification, e.g. by a third party (such as EMAS, ISO or others). Ongoing work by countries, such as national standards and national standard norms based on MCPFE criteria and indicators used for certification, could serve as examples.
- The criteria and indicators and the terms and definitions as agreed within the MCPFE as well as data collection systems on sustainable forest management form the basis for monitoring the trends towards sustainable forest management in 46 European countries. This monitoring, assessment and reporting system provides basis for verification and can be further strengthened.
- A pan-European framework could be developed which identifies minimum requirements or thresholds values on specific elements of sustainable forest management that can be adapted for use for verification purposes at the national level.
- Operational level guidelines (PEOLG) could be revised in order to serve for developing national standards and for verification of performance, including to facilitate operators demonstrating sustainability of their operations and products.

II. CLIMATE CHANGE MITIGATION AND ADAPTATION

- The role of forest management in relation to climate change mitigation and adaptations should be clarified and strengthened for actions in the signatory countries of the MCPFE.
- Possible amendments in the MCPFE set of indicators related to climate change could include carbon flow, climate mitigation efficiency, greenhouse gas emission savings through substitution, life cycle analysis of wood products compared to steel and concrete, carbon stock in harvested wood products, vulnerability, and adaptive capacity. Following expected increased demands for renewable energy,

issues that may need revisiting include the nutrient balance, acid base budgets and dead wood quantities.

- Strategies concerning the adaptation of forests to climate change should be developed at appropriate levels. These strategies should include assessment of impact and vulnerability in forests, and provide for forests to be able to adapt to climate change with reference to protection of forest biodiversity, as well as maintenance of productivity and health and vitality of forests.
- In the light of climate change, monitoring and further studies on the impact, adaptation and mitigation should be undertaken. Especially the implications of land use changes on climate change mitigation and adaptation should be further investigated. Mitigation measures need further exploration and enhancement, e.g. climate mitigation potential of bioenergy and wood constructions.

3. Other issues considered by the Working Group

3.1 Communication activities

The need for effective communication with broader society, and challenges related to it, was discussed in all three meetings of the WG. In the first meeting, participants highlighted that the MCPFE and its achievements lack recognition from decision makers outside the forest sector. One important task identified was to raise awareness on the existing MCPFE tools for sustainable forest management in connection to new developments and demands from outside the forest sector. In response to this a two page presentation of the existing MCPFE tools were compiled by the Liaison Unit Oslo as “A Quick Guide to the pan-European policy and tools for sustainable forest management”.

At the second meeting, participants underlined the importance of dialogue on the applicability and usefulness of the MCPFE tools between forest sector people and people from other governmental sectors. The WG underscored the need to actively communicate and promote, both at national and pan-European levels, the use of the MCPFE tools. The Liaison Unit Oslo was requested to provide material that could facilitate such dialogues. This discussion was continued at the third meeting, focusing on how to use existing tools and what additional instruments are needed for facilitating dialogue with different target groups. The need for continued and target group adapted communication activities (e.g. for policy makers and the broad public) was emphasised to make the MCPFE assignment and achievements more known. Gaining knowledge about public perception of MCPFE and about needs and views of society were stressed as important factors for communications.

The production of Fact Sheets on relevant MCPFE policies with clear, concise and coherent content was recommended. Facts Sheets with a pan-European perspective can be translated to national languages and potentially modified, to serve communication at national and local level. WG members stressed that the interest of broader groups could be increased if pan-European papers and results would be linked to issues of national relevance, e.g. national targets.

In order to get broader support, participants recommended that communication activities should build on existing EU stakeholder communication. Furthermore, it was suggested to increase cooperation with NGOs' communications. Stakeholders should be provided with relevant information. At country level, personal contacts should be additionally used to promote the work of MCPFE.

3.2 Concerns related to the Renewable Energy Directive

The Renewable Energy Directive was an important reason for establishing the WG and the possibilities to influence the developments on the Directive was a reiterating topic in the WG

meetings. The following elements were the main concerns in discussing a possible MCPFE response to the Renewable Energy Directive, including its “sustainability criteria”.

The different approaches, including overall goals and schedules of work, on the Renewable Energy Directive compared to the MCPFE process were noted. Problematic issues with the Directive were mentioned repeatedly during the meeting. Following the tight schedule of work on the Directive in the European Commission, the most effective direct input from the MCPFE during the first half of 2009 was seen to be through the exchange of opinions and discussions of specific concerns in the WG.

Concerns were reiterated about the limited elements defining sustainability in the Directive, and over the possible long term implications of such a definition in a legal document. Additional concerns were raised for the integrated production of biomass from forests, in case the Directive will be extended to all biomass for heat and electricity.

In order to avoid different rules for and definitions of “sustainability” of forest biomass, used for energy versus other uses, the possibility of verification at national level for MCPFE signatories was suggested. MCPFE tools could provide the frame for national reporting and verification of sustainable forest management, including sustainable production of forest biomass. This could possibly be linked to mandatory reporting based on the MCPFE criteria and indicators for sustainable forest management.

Broader land-use questions, including indirect land-use changes, were highlighted as the most challenging and at present unsolved topic. The fairness of excluding biomass from primary forests, as well as possible needs for exemptions from the strict rules, was discussed. One example mentioned was biomass from rescue harvesting in primary forest, a source that may be more frequent with changed climate.

MCPFE OPEN-ENDED AD-HOC WORKING GROUP ON “SUSTAINABILITY CRITERIA” FOR FOREST BIOMASS PRODUCTION, INCLUDING BIOENERGY:

Terms of Reference

1. Background

The MCPFE agreed on a definition of and general guidelines for sustainable forest management (SFM) (Resolution H1) and general guidelines for the conservation of biodiversity of European forests (Resolution H2) in Helsinki in 1993. Pan-European Criteria and Indicators and Pan-European Operational Level Guidelines for SFM (PEOLG) were, respectively, adopted and endorsed in Lisbon in 1998 (Resolution L2). A revised set of indicators was endorsed in Vienna in 2003 (Vienna Declaration). The criteria, indicators and PEOLG for SFM have successfully been integrated in national forestry legislation and guidelines in European countries, and have served as a reference for other regional forest policy processes.

The last years' global challenges, particularly related to climate change, land use, demand for energy, food production and water, have triggered new and increasing interest from broader society on forests and forest management. Increasing demands for evidence of the sustainability of renewable raw material, at national, EU, pan-European and global levels, connected to inter alia climate change, biodiversity, and public procurement policies, have accentuated the need for an analysis of the existing MCFPE tools for SFM.

Global and regional negotiations related to natural resources are today assessing sustainability according to new knowledge pertaining to climate change and biodiversity degradation. Faced with the concern about sustainability, the European Commission and other entities and processes are working on sustainability schemes for several uses. One example being the RES Directive (“Proposal for a Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources”, COM(2008) 19) provides that the Commission should report on requirements to extend the proposed sustainability scheme to energy uses of biomass other than biofuels and bioliquids (notably solid and gaseous fuels in heating and electricity) by 31 December 2009. As wood is at present the most important source of renewable energy, this is bound to influence the rules of the game for the forest sector.

At the MCPFE Expert Level Meeting held in Oslo 7 – 8 May 2008 it was decided to establish *an open ended ad-hoc working group on “sustainability criteria” for forest biomass production, including bioenergy*. The aim of the working group is to examine the applicability and carry out a gap analysis of the existing MCPFE tools for SFM, with a view to reveal needs for updating or revision.

2. Objectives

- To assess and demonstrate the applicability of existing MCPFE tools for SFM in relation to new demands for sustainable production of woody biomass
- Develop proposals for possible improvements of the MCPFE tools based on this assessment

3. Scope

The Working Group will focus first on existing MCPFE instruments/tools for SFM in the context of new developments and processes addressing sustainable production of forest biomass. Aspects that may need improvement or are not covered by the existing MCPFE instruments for SFM will be identified. Finally, updating that is found needed for forest biomass production for any end use meeting the needs of the pan European region will be proposed.

4. Participation

MCPFE working group in the context of the MCPFE Work Programme, consisting of MCPFE-signatories and observers.

5. Tasks

- Gather background information about relevant developments and expectations of processes addressing sustainability for biomass production among others
- Analyse the applicability of existing MCPFE tools for SFM in relation to new demands for sustainable production of woody biomass
- On the basis of the first two tasks, analyse the need for refinements and/or developments in the MCPFE instruments for SFM, and if deemed necessary, propose improvement(s)

6. Expected Output

The Working Group should produce a report which contains

- An outline of relevant developments and processes addressing sustainability for biomass production
- An analysis of the applicability and need for updates of the existing MCPFE tools for SFM which are particularly relevant for sustainable production of woody biomass for energy
- Any recommendations on potential revisions of or additions to the MCPFE tools for SFM and for further actions to be taken

The results could serve as an important reference for other regions and international processes such as the CBD, UNFCCC, as well as for future development on renewable energy and green public procurement.

The Working Group should provide relevant information for preparation of seminars and communication activities.

7. Process and working methods

- Interim results should be presented during the first half of 2009
- The number of meetings necessary will be specified according to work progress; at least three meetings are envisaged
- Technical support for preparatory and follow-up work is indicated by Sweden, Finland, Norway, United Kingdom, the European Commission, the UNECE, CEPI, CEPF, EFI and WWF. Further contributions are welcome
- Sweden is asked to facilitate the process and to co-chair meetings together with respective host countries
- As the working group will be organized in the context of the MCPFE Work Programme, the LU Oslo will provide organisational and technical assistance within resources available

APPENDIX 2

MCPFE OPEN-ENDED AD-HOC WORKING GROUP ON “SUSTAINABILITY CRITERIA” FOR FOREST BIOMASS PRODUCTION, INCLUDING BIOENERGY:

MINUTES OF MEETINGS

ROME, ITALY, 22 OCTOBER 2008

VADUZ, LIECHTENSTEIN, 18 -19 FEBRUARY 2009

UPPSALA, SWEDEN, 11 – 12 JUNE 2009

MCPFE Open-ended ad-hoc working group on “sustainability criteria” for forest biomass production, including bioenergy

Minutes of the first meeting 22 October 2008, 14.30-17.30, Rome

1. Welcome and introduction

Mr Arne Ivar Sletnes, Head of the MCPFE Liaison Unit Oslo, opened the meeting and welcomed the participants. He summarised the process so far, informing about the decision taken at the MCPFE Expert Level Meeting (ELM) in Oslo, 7 - 8 May 2008, on the establishment of the ad-hoc working group; an informal lunch meeting, announced at the ELM, held in Brussels on 15 May 2008; as well as the draft Terms of Reference for the work, to be considered by the ELM in Geneva, 12 - 13 November 2008. Mr Sletnes then gave the floor to Mr Gerben Janse, Swedish Forest Agency, to chair the meeting on behalf of Sweden as the lead actor on the activity.

In his introduction, Mr Janse reflected briefly on the goals and tasks of the working group.

2. Presentation of the draft State-of-the-art analysis

Ms Hillevi Eriksson, Swedish Forest Agency, presented the draft State-of-the-art analysis (draft developed by Sweden, 13 October 2008) that had been distributed before the meeting. She highlighted that further inputs to the list of ‘developments and processes’ (chapter 3) are needed and that the examples on possible developments of the MCPFE tools (chapter 4) were meant for illustration purposes and to initiate further discussion.

3. Discussion of the draft State-of-the-art analysis

4. Initial discussion on the applicability and adequacy of existing MCPFE guidelines and tools for sustainable forest management in the context of new developments and processes addressing sustainable production of forest biomass

Participants expressed their gratitude to Sweden for taking the lead on this important issue, and for preparing the draft state-of-the-art analysis.

The following points were raised in the combined discussion of agenda items 3 and 4:

Participants highlighted that the MCPFE and its achievements lack recognition from decision makers outside the forest sector. Thus, one important task for the working group would be to explore and raise awareness on the existing MCPFE tools for sustainable forest management in connection to new developments and demands from outside the forest sector.

Confusion over terms and concepts, for example the terms sustainability and criteria, is currently a problem. Moreover, other initiatives and processes partly address forest biomass production in fragmented ways, not consistent with the common pan-European concept of sustainable forest management. The need to clarify terminology and concepts was stressed.

Explanatory notes on the existing MCPFE tools could improve communication of what these tools are and their applicability. This could possibly serve to identify situations where these tools can serve broader purposes at national and European level, including their application by other processes/initiatives. Indirectly, this may serve to increase recognition from other sectors.

Existing MCPFE tools deal with national levels, e.g. the General Guidelines and the SFM C&I, and the stand level, e.g. the PEOLG, while some of the developments originating from other sectors focus on product qualities, for example the EUs Climate and Energy Package and work on Green Public Procurement policies. This raises the question of the need for - and the desirability of - refining the existing MCPFE tools to address the product level. An associated question deals with the regional differences and possibilities to set national standards for some of the MCPFE indicators, and how this will relate to requirements and qualities defined at product level. It was stressed that work on these areas should build on work conducted in the past by MCPFE and others (including by ITTO and the Montreal process) – and that any amendments will have to be assessed according to their policy relevance, as well as what is scientifically sound and realistic/feasible.

A gap analysis, exploring ongoing developments and new processes and their demands, and comparing these new demands to existing MCPFE tools, as started in the draft state-of-the-art analysis, was supported. An element that may need further consideration in this context could be the requirements at the product level and potentially also on landscape level (e.g. biodiversity).

The European Commission informed about their work on sustainability criteria proposed in the Climate and Energy Package. The main reason behind the proposal is the concern for possible negative impacts of biofuels, and the need to clarify the rules on what will be counted in the countries' commitments on the share of renewable sources. The European Commission noted that the Council has set up an ad hoc Working Group on biofuels Sustainability Criteria, and that negotiations are ongoing with the European Parliament and the Council on the Commission's proposal for a RES Directive. The outcome of the process is still open, including the question of extending the biofuels criteria to biomass in general, which would have an impact on the adequacy of existing tools for SFM at European level. In order to influence these important decisions, the forest sector people should involve in discussions at national levels.

5. Discussion of time plan and follow-up activities

There were no comments or proposed changes to the plan for further work.

6. Conclusions from the first meeting of the Working Group

Based on the elaborations in the first meeting, communication with broader society and a gap analysis of existing tools versus new demands were highlighted as the main priorities for the further work. The urgency was reiterated, as was the need for work in smaller groups, including with other relevant actors, before the next meeting of the Working Group.

7. Closure of the meeting

In conclusion Mr Janse thanked the participants for their contributions, and encouraged future engagement in the process.



**Second meeting
of the MCPFE Open-Ended Ad-Hoc Working Group on “Sustainability Criteria”
for Forest Biomass Production, including Bioenergy**

18 – 19 February 2009, Vaduz/Triesen, Liechtenstein

Minutes of the meeting

The second meeting of the MCPFE open-ended Ad-Hoc Working Group (WG) on “Sustainability Criteria” for Forest Biomass Production, including Bioenergy took place in Vaduz/Triesen, Liechtenstein on 18 – 19 February 2009. The meeting was attended by 18 delegates representing 12 European countries and the European Commission and 8 participants representing observer organisations and the Liaison Unit Oslo.

The meeting was co-chaired by Mr. Gerben Janse, Sweden and Mr. Arne Ivar Sletnes, Liaison Unit Oslo.

Opening of the meeting/Welcome addresses

Mr. Gerben Janse, Sweden welcomed the participants and opened the meeting.

Mr. Felix Näscher, Director General, Liechtenstein Ministry of Environmental Affairs, Land Use Planning, Agriculture and Forestry welcomed participants on behalf of Liechtenstein.

Adoption of the agenda

The agenda was adopted without amendments.

Introduction to the tasks for the second meeting

Mr. Gerben Janse while introducing the tasks for the meeting referred to the decision at the MCPFE Expert Level Meeting (ELM), Oslo, May 2008 to establish the *Open-ended Ad-hoc Working group on sustainability criteria for forest biomass production, including bioenergy*, and the urgency of the work emphasised by the ELM. He also referred to the Terms of Reference for the working group, which were adopted at the MCPFE ELM, Geneva, November 2008. The first meeting of the working group was held 22 October 2008, in Rome, discussing a first draft of a gap analysis developed by Sweden as well as the importance of communication with broader society. According to the time schedule for the working group, the second meeting should discuss (i) the revised and extended draft gap analysis of applicability of existing MCPFE tools for SFM in the context of new developments and expectations of processes addressing sustainability of biomass production, and (ii) needs for, and potentially suggest, refinements and/or developments in the MCPFE tools for SFM. Mr. Janse also highlighted communication activities, including ways for how to ensure proper input to other organisations and processes addressing sustainability in biomass production.

Presentations

European Commission’s work on energy from renewable sources

Ms. Emese Kottász, European Commission DG TREN, presented the sustainability scheme in the Renewable Energy Directive, and the four criteria for biofuels/bioliquids to be considered in the 10% target for renewables in transport and 20% RES target in 2020. She raised

questions of the applicability of the current sustainability scheme for a possible extension of the directive to biomass for heat and electricity; whether the issue of carbon cycles is adequately addressed by the current tools for SFM; if restrictions on use of lands with high carbon stocks and/or high biodiversity values in the current directive can be extended to forest biomass; and how to enforce and verify sustainable forest management.

Examples of other processes working on sustainable biomass production and alternative approaches

Mr. László Máthé, Forest and bioenergy coordinator, WWF, described legally binding (EIA, procurement policies, legality), voluntary (certification, verification, score card systems) and stepwise moves as alternative approaches to ensure sustainable biomass production.

Available credible tools and systems, including chain of custody, should be the basis for further developments, while awareness to different concepts and their applicability were stressed.

Presentation of the draft gap analysis of MCPFE tools in relation to new demands for sustainable production of woody biomass,

Ms. Hillevi Eriksson, Swedish Forest Agency, presented an updated version of the gap analysis of MCPFE tools in relations to new demands for sustainable production of woody biomass. She highlighted greenhouse gas efficiency as an overall goal in counteracting climate change, also when discussing alternative sources of renewable energy. She discussed potential negative effects following increasing demand for bioenergy, including loss of biodiversity, reduced soil and water quality, and only small net decreases in greenhouse gas emissions. In the discussion on how to move forward, possible new or updated guidelines for intensive production and harvesting, the complexity of climate mitigation efficiency (i.e. production/use versus land-use conversion), and/or the development of minimum requirements (e.g. for biodiversity and climate mitigation efficiency) were brought up.

Challenges connected to more intensive use of forest resources for energy, a scientific input,

Ms. Inge Stupak Møller, Forest & Landscape Denmark, University of Copenhagen presented the current state of knowledge on the following environmental elements: soil fertility and acidity, quality effects on adjacent waters, growth and wood production, biodiversity, carbon, soil erosion and physical properties, and calamities (pests and fires). While the scientific knowledge is increasing on many issues, there is still insufficient knowledge on full scale, long term effects of more intensive utilisation of forest resources under different conditions.

General comments, expectations for the 2nd Working Group Meeting

The following points were brought up when inviting general comments:

- Indicators used for monitoring and prescriptive guidelines for sustainable forest management need to be dealt with separately, while both may need refinements in response to renewed and broadened focus on climate change and other processes dealing with closely related issues.
- Landscape and land-use change perspectives are getting more important.
- Monitoring and verification, including evidence sharing outside of the forest sector, needs more attention.
- Awareness of the complexities in the relevant elements, and considerations of variation in conditions, concerns and effects within Europe as well as other regions are required, in order to bridge the gap between developing and developed countries.

Applicability of existing MCPFE tools for SFM in the context of new developments and expectations of processes addressing sustainability of biomass production

Based on the presentations and background documents provided before the meeting, participants worked in two break-out groups chaired by Mr. Felix Näscher, Liechtenstein and Mr. Knut Øistad, Norway. The discussions in the groups were guided by the following

questions, building on a document presenting issues for consideration by the second working group meeting:

1. *Does the draft gap analysis give a good presentation of the applicability of the MCPFE tools in the context of new developments? Are the five thematic elements identified in the draft gap analysis equally important, or are some more important than others? Are there any other elements deserving attention?*
2. *Where gaps are identified, what could be the role of the MCPFE in order to fill them?*
 - a. *Minimum requirements and/or more precise definitions of sustainability are being developed in various processes. Should the MCPFE have a role in developing more precise definitions or minimum requirements? If yes, what role*
 - b. *Land conversion and broader land-use questions are dealt with in many of the ongoing deliberations of sustainability of bioenergy production. How should the MCPFE in the future deal with broader land-use management policies?*
3. *Which thematic areas are most important to work further on? And which actions are most important in the short and long term*

In summary, the groups and the subsequent discussion came up with the following:

The non-legally binding status of the MCPFE tools was identified as a challenge, and reference was made to the MCPFE working group exploring the potential added value and possible options for a legally binding agreement on forests in the pan-European region.

As for missing elements in the current MCPFE tools, reference was made to carbon-flows and greenhouse gas emissions. The groups agreed that the issue of climate change mitigation (and adaptation) needs to be elaborated within the MCPFE frame. It was further recommended to investigate the possibilities of incorporating minimum requirements and land-use management into the MCPFE tools. The need for national discussions of possible refinements, minimum requirements and/or more comprehensive treatment of carbon and greenhouse gas issues, before the next meeting of the working group were highlighted.

The MCPFE (the LUO, signatory states and observer organisation) should make an increased effort of feeding current understanding of sustainable forest management and its principles, and how MCPFE acts as its guardian, into other processes, in particular into the continuous RES-Directive process. Part of this task takes place in the international arena, the other part demands more dialogue at the national level, between various governmental departments.

Discussion on priority of issues to be elaborated further

On the second day the discussion focused on needs for, and potential suggestions for, refinements and/or developments on issues identified on day 1 to be elaborated for consideration at the next Working Group meeting.

The following topics were identified and agreed upon:

1. *Assess the RES directive with regard to possible criteria for biomass and to provide contributions/suggestions*
2. *How to include climate mitigation/adaptation efficiency in MCPFE tools*
3. *Analyse the pros and cons of developing MCPFE minimum requirements*
4. *How to improve our communication with others*

(1) Assessment of the RES Directive with regard to possible criteria for biomass and to provide contributions/suggestions

The participants suggested several approaches relevant for such an assessment. It was proposed to look at each of the existing criteria (and definitions used) in the RES Directive and analyse how they could apply to biomass. The assessment should, to the extent possible, take into account that there are different types of biomass (from e.g. sustainably managed forest, but also from short rotation coppice and agricultural land), different use of biomass

and a huge variation among operators. As regards the current RES Directive criteria, it was emphasised that “high carbon stock land” and “highly biodiverse land” are most relevant to look at in close detail.

It was underlined that the assessment should also address the issue of fair treatment of sustainably produced wood compared to biomass from other sources.

(2) How to include climate change mitigation/adaptation efficiency in MCPFE tools

The participants agreed that there is a need to look more closely into what countries are doing in the area of forest management and climate change efficiency, e.g. national assessments of contribution of the forest sector towards climate change mitigation. This could be done through surveys or to look at aggregated scientific reports. Possible linkages could be found in the work undertaken by the UNECE/FAO (and its teams of specialists) related to carbon balances and in signatory states reports to the UNFCCC and the Kyoto protocol. It was also proposed to further clarify what is meant with frequently used terms such as adaptation and mitigation efficiency.

(3) Analyse the pros and cons of developing MCPFE minimum requirements

Before the next meeting pros and cons of developing minimum requirements should be investigated. It was suggested that well defined minimum requirements on possible elements should be developed for discussion at the next meeting. As one element in such an analysis it was proposed that the Liaison Unit Oslo could approach the secretariats of central international organisations and initiate a dialogue on their judgement of the applicability and usefulness of the MCPFE tools (with a focus on minimal requirements and carbon/climate change issues).

Participants from the European Commission reiterated that, in order to contribute to their work on sustainability criteria, any criteria with minimum requirements should be easy to quantify and verify, non-discriminative towards countries outside the EU, allow for objective verification, applicable in all contexts, and WTO compatible.

(4) How to improve our communication with others

The participants agreed that most of what had been said on the previous three questions actually all related to communication. It was emphasised by Working Group participants that a dialogue on the applicability and usefulness of the MCPFE tools is needed between forest sector people and people from other governmental sectors also at national level. The Liaison Unit Oslo was requested to provide material that could also facilitate such dialogues.

Conclusions and decision on further steps

It was suggested that the 3rd meeting of the working group will take place on 11-12 June 2009 in Sweden.

Before the third meeting, the recommendations from the working group on the four prioritised elements will be further elaborated:

1. The RES directive's criteria will be assessed with a view to extending the directive to biomass for energy other than bioliquids and biofuels, highlighting problematic issues in the current directive and possibly suggest refinements.
2. Possible ways to refine existing MCPFE policies and tools for sustainable forest management in order to better reflect new developments on carbon issues and climate change mitigation/adaptation will be further elaborated. The possibilities span from small, easy changes (e.g. to include carbon flow in line with UNFCCC/Kyoto protocol reporting) to more extensive changes, like developing minimum requirements and/or to include broader land-use management, landscape issues and land conversion. The possibility of conducting a survey of what signatory states do on climate change efficiency in relation to forests, e.g. national assessments of contribution of the forest sector towards climate change mitigation, should be further investigated, possibly in collaboration with the UNECE/FAO.

3. The pros and cons of developing MCPFE minimum requirements will be investigated further, through proactive dialogue with secretariats of central international organizations on their assessment of our tools (with a focus on minimum requirements and carbon/climate change issues). Material developed in this context should also be provided for use at domestic level.
4. On how to improve our communication with others, the three elements above are all related to communication. Web-page, brochures, and quick guides presenting MCPFE tools to targeted recipient groups, including material that can be used actively, should be further developed.

To facilitate progress at the next meeting, background documents must be sent in time to allow for national preparations for discussions of possible refinements of the MCPFE tools, for example on minimum requirements and/or more comprehensive treatment of carbon and greenhouse gas issues.

As a final point it was emphasized that a broader participation in the working group (e.g. by countries from the east and south and organisations using the MCPFE tools) would be beneficial.

Closure of the meeting

In closing the meeting the co-chairs Mr. Gerben Janse and Mr. Arne Ivar Sletnes, Liaison Unit Oslo, thanked the Liechtenstein Ministry of Environmental Affairs, Land Use Planning, Agriculture and Forestry for excellent arrangements and the participants for their constructive work.



Third meeting of the MCPFE Open-ended Ad-Hoc Working Group on “sustainability criteria” for forest biomass production, including bioenergy

Uppsala, Sweden, 11 - 12 June 2009

The third meeting of the MCPFE open-ended Ad-Hoc Working Group on “Sustainability Criteria” for Forest Biomass Production, including Bioenergy took place in Uppsala, Sweden, 11 - 12 June 2009. The meeting was attended by 17 delegates representing 9 European countries and the European Commission, and 9 participants representing observer organisations and the MCPFE Liaison Unit Oslo.

The meeting was co-chaired by Mr. Arne Ivar Sletnes, MCPFE Liaison Unit Oslo and Mr. Gerben Janse, Sweden.

Opening of the meeting/Welcome addresses

Mr. Arne Ivar Sletnes opened the meeting and welcomed the participants. Ms. Lotta Möller, Ministry of Agriculture, Sweden, welcomed participants to Sweden, and to Uppsala.

Introduction to the tasks of the third meeting

In introducing the tasks of the third meeting, Mr. Sletnes referred to the Terms of Reference for the working group, adopted at the MCPFE Expert Level Meeting in Geneva, November 2008. He expressed gratitude to Sweden for taking the leading role in the work, and for hosting the third meeting. He briefly elaborated on the two former meetings of the working group, in Rome, Italy on 22 October 2008 and in Vaduz, Liechtenstein on 18 – 19 February 2009. He referred to the time schedule for the working group, specifying that the third meeting should finalise the analysis of needs for further refinements and/or developments of existing MCPFE tools for sustainable forest management, SFM, and finalise the recommendations regarding refinements and/or developments of existing MCPFE tools for SFM.

Presentation of Background Papers

Ms. Hillevi Eriksson, Swedish Forest Agency, presented Background Paper 1: MCPFE tools for SFM in relation to new demands for sustainable production of biomass for bioenergy – gap analysis and suggested developments, and Background Paper 2: Assessment of the “sustainability criteria” in the Renewable Energy Directive, i.e. the Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources (see Annex 1 for slides).

Mr. Jari Parviainen, Finnish Forest Research Institute, presented Background Paper 3: Feasibility assessment of using MCPFE tools for public procurement policies and sustainability requirements in the EU RES directive (see Annex 2 for slides).

Ms. Berit Hauger Lindstad, MCPFE Liaison Unit Oslo, presented Background Paper 4: Possible refinements and developments of MCPFE tools - Compilation to facilitate discussions of recommendations from the working group (see Annex 3 for slides).

General comments and feedback on the background documents

The importance of separating the discussion of possible refinements or developments of the MCPFE tools for SFM, the main task of the working group, from assessments of implications of

the EU RES Directive was highlighted by participants. However, comments and advice to the RES Directive, especially on problematic issues if extended to biomass for heat and electricity, was welcomed by the European Commission (EC). Quick inputs and legal proposals were encouraged, while it was stressed that some of the core political elements are not open for discussion (e.g. the no go areas).

For the main task, the overall goal of having one set of tools for SFM, regardless of end-use of the products from the forests, was reiterated. Refinements in existing tools were highlighted as a way to ensure the relevance of the MCPFE process also in the future, while duplication of work with other processes/initiatives was warned against. Additionally, the urgency of responding to new developments versus the need to have a proper process on possible refinements of the tools, were brought up.

Discussion of pros and cons of refining MCPFE tools to better reflect increased focus on carbon and climate change mitigation/adaptation

Further development of MCPFE indicators and possibly also the operational level guidelines were supported in light of the increased focus on carbon and climate change. The meeting participants did not support to further develop the pan-European approach to National Forest Programmes or to develop pan-European guidelines in response to these changes.

Discussion of pros and cons of, and possible options for, serving new demands for verification of sustainability, e.g. through developing MCPFE minimum requirements

Assessment of performance level and verification was seen as an increasingly important demand from other processes. Challenges in defining common requirements on all forest aspects across countries with different ecological and socio-economic situations were highlighted, but the possibility of defining minimum requirements/thresholds on selected aspects was not excluded. It was also highlighted that performance checks/verification can take place at different levels, for example against indicator thresholds at national level or through certification schemes in forest operations, and that these can serve different purposes.

The participants agreed that the MCPFE should investigate possibilities to refine the MCPFE tools to better serve as basis for verification purposes. Elements that need further exploration include clarification of the purpose(s) of the verification, the level(s) of verification, and possible instruments for verification.

Discussion of pros and cons of further development of MCPFE policies related to broader land-use management

The linkages between forest management and broader land-uses is becoming more evident through raised awareness to the multiple roles of forests and forest management related to climate change mitigation and adaptation, including through increased attention to renewable energy. Participants raised concern about the static approach to land use-changes in the RES Directive, and criticised the no land conversion rule of the Directive for not allowing development where needed and for punishing countries that still have primary forests left. Meeting participants agreed that integrated land use management and changes in land use needs further investigation, also in the context of climate change mitigation and adaptation.

Discussion of a possible MCPFE response to the Renewable Energy Directive, including its “sustainability criteria”

The different approaches, including overall goals and schedules of work, on the Renewable Energy Directive in the EC compared to the MCPFE process were noted. Problematic issues with the RES Directive were mentioned repeatedly during the meeting. Following the tight schedule of work in the EC, the most effective direct input from the MCPFE at this stage was seen to be through the exchange of opinions and discussions of specific concerns in the working group.

Concerns were reiterated about the limited elements defining sustainability in the Directive, and over the possible long term implications of such a definition in a legal document. Additional

concerns were raised for the integrated production of biomass from forests if the Directive will be extended to all biomass for heat and electricity.

In order to avoid different rules/definitions of “sustainability” of forest biomass, used for energy versus other uses, the possibility of verification at national levels for MCPFE signatories were discussed. MCPFE tools could provide the frame for national reporting and verification of sustainable forest management, and hence sustainable production of forest biomass from national sources. This could possibly be linked to mandatory reporting according to the MCPFE criteria and indicators.

Broader land-use questions, including indirect land-use changes, were highlighted as the most challenging and at present unsolved area. The fairness of excluding biomass from primary forests, as well as possible needs for exemptions from the strict rules, were discussed. An example mentioned was biomass from rescue harvesting in primary forest, a source that may be more frequent with changed climate.

Update on the MCPFE Working Group on exploring the potential added value of and possible options for a legally binding agreement on forests in the pan-European region

Ms. Malgorzata Buszko-Briggs, MCPFE Liaison Unit Oslo, presented the status of the work in the MCPFE Working Group on a possible legally binding agreement on forests in Europe (see Annex 4 for slides).

Summary of discussions day 1

Mr. Gerben Janse summarised with announcing that elements identified in the discussions the first day will be compiled in a draft recommendation from the working group to be presented and discussed on day 2.

National and regional communication activities

Ms. Kristin Dawes, MCPFE Liaison Unit Oslo, presented the background paper on communication activities (see Annex 5 for slides). The discussion focused on how to use existing tools and what additional instruments are needed for facilitating dialogue with different target groups. The need for continued and target group adapted communication activities was emphasised to make the MCPFE assignment and achievements more known to policy makers and the broad public. Gaining knowledge about public perception of MCPFE and about needs and views of society were stressed as important factors for communications.

The production of Fact Sheets on relevant MCPFE policies with clear, concise and coherent content was recommended. Facts Sheets with a pan-European perspective can be translated to national languages and potentially modified, to serve communication at national and local level. Other short papers, e.g. the Quick Guide to MCPFE policies and tools, could be used similarly. Working group members stressed that the interest of broader groups could be increased if pan-European papers and results would be linked to issues of national relevance, e.g. national targets.

In order to get broader support, participants recommended that communication activities should build on existing EU stakeholder communication. Furthermore, it was suggested to increase cooperation with NGOs' communications. Stakeholders should be provided with relevant information. At country level, personal contacts should be additionally used to promote the work of MCPFE.

Recommendations from the Working group

A draft compilation of recommendations from the working group was presented for discussion under this agenda item. Participants provided input to the draft recommendations. It was agreed that a revised version based on these inputs, would be circulated to participants with the possibility of providing comments. Based on inputs and e-mail communication, the recommendations of the working group are as follows:

The Pan-European tools for SFM provide an appropriate generic framework for potential verification of sustainable forest management, although in this context they do have to be supplemented by new elements. Based on the background papers and the discussions, no severe gaps were identified in the tools of the MCPFE regarding sustainable forest management related to new demands, including for sustainable production for woody biomass. However, in spite of the broad acceptance and support of the MCPFE tools, the non-binding status of the tools was identified as an issue for them being used by regulatory processes and institutions. The MCPFE tools for sustainable forest management should be refined and further developed in order to better meet the new requirements, such as climate change issues, wood based bioenergy, and various forest services. Any refinements shall build on former work and existing processes and any duplication of work should be avoided. The following text forms a set of recommendations for consideration by the MCPFE Expert Level Meeting, November 2009.

I. VERIFICATION OF SUSTAINABLE FOREST MANAGEMENT

- The need for developing and/or updating the MCPFE tools to serve as a basis for performance level and verification of sustainable forest management has been identified. The tools and their national application could be further developed to be applicable as basis for verification, e.g. by a third party (such as EMAS, ISO or others). Ongoing work by countries, such as national standards and national standard norms based on MCPFE criteria and indicators used for certification, could serve as examples.
- The criteria and indicators and the terms and definitions as agreed within the MCPFE as well as data collection systems on sustainable forest management form the basis for monitoring the trends towards sustainable forest management in 46 European countries. This monitoring, assessment and reporting system provides basis for verification and can be further strengthened.
- A pan-European framework could be developed which identifies minimum requirements or thresholds values on specific elements of sustainable forest management that can be adapted for use for verification purposes at the national level.
- Operational level guidelines (PEOLG) could be revised in order to serve for developing national standards and for verification of performance, including to facilitate operators demonstrating sustainability of their operations and products.

II. CLIMATE CHANGE MITIGATION AND ADAPTATION

- The role of forest management in relation to climate change mitigation and adaptations should be clarified and strengthened for actions in the signatory countries of the MCPFE.
- Possible amendments in the MCPFE set of indicators related to climate change could include carbon flow, climate mitigation efficiency, greenhouse gas emission savings through substitution, life cycle analysis of wood products compared to steel and concrete, carbon stock in harvested wood products, vulnerability, and adaptive capacity. Following expected increased demands for renewable energy, issues that may need revisiting include the nutrient balance, acid base budgets and dead wood quantities.
- Strategies concerning the adaptation of forests to climate change should be developed at appropriate levels. These strategies should include assessment of impact and vulnerability in forests, and provide for forests to be able to adapt to climate change with reference to protection of forest biodiversity, as well as maintenance of productivity and health and vitality of forests.
- In the light of climate change, monitoring and further studies on the impact, adaptation and mitigation should be undertaken. Especially the implications of land use changes on climate change mitigation and adaptation should be further investigated. Mitigation

measures need further exploration and enhancement, e.g. climate mitigation potential of bioenergy and wood constructions.

Conclusions and closure of the meeting

In conclusion, Mr. Sletnes stated that a report from the working group will be compiled based on background papers and discussions in the working group. Participants in the working group will get a draft of the report with possibilities to provide comments, before the report will be finalised by Sweden and the MCPFE Liaison Unit Oslo. The report will be brought to the MCPFE Expert Level Meeting in 24-25 November 2009.

The meeting was closed with expressing renewed gratitude to Sweden for taking lead in the work, and thanking everybody for their constructive participation.

APPENDIX 3

***MCPFE open-ended Ad-Hoc Working Group on “Sustainability Criteria”
for Forest Biomass Production, including Bioenergy***

Background paper I

for the third meeting of the working group,

Uppsala, 11 - 12 June 2009

MCPFE tools for SFM in relation to new demands for
sustainable production of biomass for energy
– gap analysis and suggested developments

Developed by Sweden (Swedish Forest Agency)

with support from MCPFE Liaison Unit, Oslo

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1. Introduction

The MCPFE agreed on a definition of and general guidelines for sustainable forest management (SFM) (Resolution H1) and general guidelines for the conservation of biodiversity of European forests (Resolution H2) in Helsinki in 1993. Pan-European Criteria and Indicators and Pan-European Operational Level Guidelines for SFM (PEOLG) were, respectively, adopted and endorsed in Lisbon in 1998 (Resolution L2). A revised set of indicators was endorsed in Vienna in 2003 (Vienna Declaration). The criteria, indicators and PEOLG for SFM have successfully been integrated in national forestry legislation and guidelines in European countries, and have served as a reference for other regional forest policy processes.

The last years' global challenges, particularly related to climate change, land use, demand for energy, food production and water, have triggered new and increasing interest from society at large on forests and forest management. Increasing demands for renewable raw material, at national, EU, pan-European and global levels, connected to inter alia climate change, biodiversity, and public procurement policies, have accentuated the need for an analysis of the adequacy of the existing MCPFE tools for SFM.

As commitments of high reduction of global fossil fuel consumption are needed to prevent global warming from exceeding plus 2°C, it is likely that global demand for biomass will continue to show a strong increase onwards in case the development pace is not slowed by political means.

At the latest pan-European Ministerial Conference on the Protection of Forests in Europe, in Warsaw 2007, the European ministers responsible for forests highlighted the need to create enabling conditions to increase the mobilisation of wood from sustainably managed forests for all uses. Forest biomass, wood processing residues and recovered wood represent important sources of renewable energy and can reduce greenhouse gas emissions by replacing fossil fuels. The ministers at the Warsaw Conference also underlined that efforts should be made to ensure that all wood production, including short rotation and fast growing energy crops, should be guided by the principles of sustainability. As a follow-up of the commitments in Warsaw, the MCPFE Expert Level Meeting held in Oslo 7 – 8 May 2008 decided to establish an open ended ad-hoc working group on sustainability criteria for forest biomass production, including bio-energy.

2. Purpose and scope of the working group

The purposes of the working group were to assess and demonstrate the applicability of existing MCPFE tools for SFM in relation to new demands for sustainable production of woody biomass and, if deemed necessary, to develop proposals for possible improvements of the MCPFE tools based on this assessment.

To obtain these aims the Working Group has gathered background information about relevant developments and expectations of processes addressing sustainability for biomass production, analysed the applicability of existing MCPFE tools for SFM in relation to new demands for sustainable production of woody biomass, and analysed the need for refinements and/or developments of the MCPFE instruments for SFM.

This report contains an overview of relevant developments and processes addressing sustainability for biomass production and an analysis of the applicability and need for updates of the

existing MCPFE tools for SFM which are particularly relevant for sustainable production of woody biomass for energy. It is assumed that this analysis may also provide important input to the European Commission's elaborations of the need for environmentally motivated minimum requirements on biomass production and extraction for heat and electricity, to be conducted by 31 December 2009 (cf. the directive on renewable energy, RED).

3. Existing MCPFE instruments for sustainable forest management

3.1 Introduction

The instruments, that were developed from 1990 and onwards, include the General Guidelines for Sustainable Management of Forests in Europe, the General Guidelines for the Conservation of the Biodiversity of European Forests, the six pan-European Criteria for sustainable forest management and the Improved Pan-European Indicators for Sustainable Forest Management, the pan-European Operational Level Guidelines, the Pan-European Guidelines for Afforestation and Reforestation with a special focus on the provisions of the UNFCCC as well as the MCPFE approach to National Forest Programmes in Europe.

The Pan-European tools for Sustainable Forest Management form a European reference for global forest dialogue. They can contribute, as a framework representing consensus within the Pan-European Process, to the achievement of further consensus on sustainable management of all types of forests on a global scale. The tools can contribute to improved communication, awareness building and implementation of appropriate action for sustainable forest management.

One of the strengths of the MCPFE instruments for sustainable forest management is that they have been and are being developed in an iterative process with the broadest practical, scientific and political consensus possible. The tools were developed in a transparent way, with broad participation from signatory countries and observer organisations throughout the European region. Considerable resources have been put into the development of the tools, including from the research community, the UNECE and FAO.

The conceptual frame for sustainable forest management may however need adjustments and developments in response to changing circumstances and new demands. The conditions for forests are changing, concepts evolve, technical and scientific knowledge improve and relevant international agreements develop. In order to remain up-to-date, it is paramount for the MCPFE guidelines and tools for sustainable forest management to respond to and cover also the new and upcoming challenges at hand, notably climate change, bio-energy production and public procurement. The following presentation of existing MCPFE tools for sustainable forest management serve as a background for analysing their applicability and adequacy in relation to these new demands.

3.2 The MCPFE general guidelines

The MCPFE general guidelines for sustainable forest management and general guidelines for conservation of biological diversity of European forests were agreed in Helsinki in 1993. In the general guidelines for sustainable forest management, a common concept of sustainable forest management in the Pan-European region was agreed. European ministers responsible for forests agreed that "sustainable management *means the stewardship and use of forests and forest*

lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems” (Helsinki Resolution 1: *General Guidelines for the sustainable management of forests in Europe*, 1993¹). This concept has been further developed through other commitments, resolutions and declarations of the Ministerial Conferences, dealing with all dimensions of sustainable forest management.

3.3 The MCPFE criteria and indicators and operational level guidelines

The MCPFE was the first regional policy process which developed and politically endorsed criteria and indicators for sustainable forest management. The six criteria describe different aspects of sustainable forest management, and are consistent with the globally accepted seven thematic elements of sustainable forest management (United Nations Forum on Forests 2004). The MCPFE criteria and indicators are also in harmony with criteria and indicator processes for sustainable forest management in other regions of the world. For a comparison of the MCPFE criteria and indicators with globally agreed thematic areas of sustainable forest management and criteria and indicators under the Montreal Process and the International Tropical Timber Organization (ITTO), see Annexes 3 and 4.

The six Pan-European criteria for sustainable forest management are:

1. Maintenance and appropriate enhancement of forest resources and their contribution to global carbon cycles;
2. Maintenance of forest ecosystems’ health and vitality;
3. Maintenance and encouragement of productive functions of forests (wood and non-wood);
4. Maintenance, conservation and appropriate enhancement of biological diversity in forest ecosystems;
5. Maintenance, conservation and appropriate enhancement of protective functions in forest management (notably soil and water); and
6. Maintenance of other socio-economic functions and conditions.

The associated quantitative and descriptive indicators were developed to assess and assist further progress in sustainable forest management, at the international and national levels.

The indicators are used in international and national reporting, serving evaluation of progress towards sustainable forest management. It was clear from the beginning that the indicators would be subject to review and further improvement. A set of improved indicators were endorsed by the Ministerial Conference in Vienna (2003) as “*Improved Pan-European Indicators for Sustainable Forest Management*” (Annex 4).

The Pan-European Operational Level Guidelines for Sustainable Forest Management, endorsed at Lisbon Ministerial Conference (1998) were elaborated to further promote sustainable forest management in Europe by translating international commitments down to the level of forest management planning and practices (Annex 5). They form a common framework of recommendations that can be used on a voluntary basis and as a complement to national and/or regional instruments to further promote sustainable forest management at the field level. They are designed in the context of, and in full respect to, national or regional instruments and actions.

¹ <http://www.mcpfe.org>

Their purpose is to identify complementary actions at the operational level which further contribute to the sustainability of forest management. They consist of two parts: “Guidelines for Forest Management and Planning” and “Guidelines for Forest Management Practices”.

3.4 Pan-European Guidelines for Afforestation and Reforestation with a special focus on the provisions of the UNFCCC

The Pan-European Guidelines for Afforestation and Reforestation with a special focus on the provisions of the UNFCCC were developed in cooperation between MCPFE and the Environment for Europe process and its Pan-European Biological and Landscape Diversity Strategy (PEBLDS), and approved November 2008. The guidelines serve as a set of recommendations for consideration in afforestation and reforestation programmes that aim *inter alia* at carbon sequestration and reduction of CO₂ emissions from fossil fuels through woody biomass production for bioenergy.

3.5 MCPFE Approach to National Forest Programmes in Europe

The MCPFE Approach to National Forest Programmes in Europe deals with procedural elements of a policy process, or policy planning, implementation, monitoring and evaluation at national and/or sub-national levels. The following principles are highlighted: participation, holistic and inter-sectoral approach, iterative process with long-term commitment, capacity-building, consistency with national legislations and policies, integration with national sustainable development strategies, consistency with international commitments recognizing synergies between international forest-related initiatives and conventions, institutional and policy reform, ecosystem approach, partnership for implementation, and raising awareness.

4. Potential opportunities and threats related to increasing demands for biomass for energy

Wood has been used for heating and cooking from time immemorial, and domestic fuel is still one of the greatest uses for wood around the world. Due to the access to other energy sources, mainly fossil fuels, humanity has in most regions of the world been able to develop high energy consumption without reaching the limits for what can be extracted or produced from soils. Now that we need to actively reduce the use of fossil fuels to avoid far-reaching climate changes, pressure on land to provide energy at low cost will likely increase significantly. In some forest industry regions, there is now a growing demand for stemwood of low industrial value and of new tree compartments for energy purposes. Various forms of whole-tree harvesting are developing. In some regions and for some forest types, this “third” product beside pulpwood and sawn wood may improve the economic basis for forestry in general, thereby resulting in increased levels of commercial harvesting and potentially also increased ambitions to increase wood production through improved management, fertilisation, afforestation/reforestation, etc. Again in other regions, the economy will improve in cultivating crops (sugar cane, wheat, willow, soy beans, etc) mainly aimed for energy production, often fuels for transport. Such cultivation may in some cases be preceded by deforestation or conversion of other land use that serve certain values.

In this context must be considered the problem of poverty and malnutrition in developing countries and thus the need for increased and improved and sustainable food production and basic economic development in many regions of the world. From this perspective, the increasing demand for bioenergy has potentially a positive impact as it brings new money into rural business and activities and improves possibilities for a general agricultural development. However,

in some regions there will also be a negative effect for the landless through the land-use competition between fuel and food or between land owners and land “users”. The processes “Roundtable for Sustainable Biofuels” and “The Forest Dialogue” (see Annex 6) are trying to find guiding principles for dealing with possibilities and potential conflicts from a third world perspective.

In general, the industrial bioenergy sector is currently growing in developing as well as developed countries because of increased competitiveness and as national and regional government policies increasingly encourage the use of domestically available and renewable energy sources that minimize fossil fuel consumption and thereby net carbon emissions (cf Stupak *et al*, in prep.). From this development both positive and negative impacts can be anticipated.

On the positive side of this development is that:

- Reduced GHG emissions will follow in case combustion of fossil fuels is replaced or avoided. Climate mitigation is thereby obtained at a lower cost than if these options would not be available.
- There could be an increased economic benefit for land owners and people working in the chain of production, extraction, transportation, etc, i.e. contribute to rural development, in some countries even poverty reduction and decreased dependency on fuel imports.
- An increased economic benefit from forests that produce unspecific wood qualities at a low cost may promote afforestation and reforestation that lead to increased areas of semi-natural forests in some regions. In such cases, this development could lead to enhanced biodiversity in the landscape.
- There will be a reduced risk for forest fire in more dry regions in case less amounts of fuel are being left on ground.
- In some regions there will be a reduced risk for insect and pest outbreaks and unnecessary losses of wood values when less forest is allowed to grow dense and high before they are hit by storm-felling or a major outbreak of forest damage from insects or pathogens. This may become a factor of growing significance in regions where climate change poses increasing risks for large-scale forest damage.

The three first positive effects are acknowledged in Warsaw Resolution 1 on Forests, Wood and Energy.

However, this development is also accompanied by increasing concerns over whether or not environmental and social values are adequately ensured when the biomass is grown, harvested, and converted to energy.

Conversion of natural and seminatural forests and grasslands into more intensively managed land or (biofuel) plantations may result in:

- a. loss of biodiversity because of less breeding and feeding material left at site, competition from exotic species, less light, drastic physical and chemical changes due to harvesting and cultivation, etc [**Forest biodiversity**]
- b. imbalanced nutrient budgets in the long-term and/or physically and chemically disturbed pools of mineral soil and organic matter leading to:
 - i. reduced long-term site productivity
 - ii. reduced quality of run-off water for open-water biodiversity and for drinking purposes [**Soil and water quality**]
- c. absent or too small net gain for the climate due to substantial negative effects on biomass and/or soil carbon pools (such as after drainage) or on N₂O emissions, or

- because of too high use of fossil input energy for land and crop management, extraction, transport or industrial refinement [**Climate mitigation efficiency**]
- d. less production and preservation of other values and goods (cultural, recreational and aesthetical values, berries, fruit, game, wood to collect, etc) - for people who utilise goods and services from natural and seminatural forests and grasslands without tenure rights [**Other services and goods**]

A higher frequency of pest outbreaks could follow from:

- e. loss of biodiversity including populations of natural enemies
- f. more trade with non-refined biomass that may spread insects and pathogens between regions of the world [**Increased risk of forest damage**]

The production of renewable energy could be increased at the expense of

- g. supply of raw material for other forest industries
- h. food production to the extent that it increases problems of malnourishment and hunger
- i. forest area [**Land-use competition**]

5. Applicability of existing MCPFE tools for sustainable forest management seen in relation to new demands and development

5.1 General remarks

In the following the applicability of existing MCPFE tools for sustainable forest management are examined in relation to the present development related to increased demand for renewable energy. So far, the MCPFE tools provide broad guidelines at pan-European level while the formulation of goals, including threshold values, for the various indicator and limitations for land-owners and operators have been decided at national or regional level, based on national situations and priorities, best available knowledge, etc. An important question is whether this is sufficient also in the current situation, or if some common minimum requirements could or should be set at pan-European level. This is discussed in chapter 6 below. Moreover, the tool package concerns activities in the field only and not the refinement or consumption steps. This could also be discussed (cf chapter 5.4).

The issue of land-use competition is only treated to some extent below.

5.2 Protection of forest biodiversity

Potential effects of increased demand for bioenergy

In chapter 4 was listed the risk that conversion of natural and semi-natural forests and grasslands into more intensively managed land or (biofuel) plantations may bring about loss of biodiversity because of less breeding and feeding material left at site, competition from exotic species, less light, drastic physical and chemical changes due to harvesting and cultivation, etc.

Definition: Forest biological diversity encompasses the multitude of plants, animals and microorganisms that inhabit forest areas and their associated genetic diversity (www.cbd.int/forest).
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One has to admit that a great part of the biodiversity that still exist in present forests and other natural and semi-natural lands do so because it was never, or has not been for a very long time,

economic to exploit that land for other purposes, such as for agriculture, infrastructure, mining, intensive plantation forestry, etc. The history of restricting economic activities to any significant extent in favour of biodiversity is not very long. In the coming, now that there is a need to strongly reduce the annual fossil fuel consumption over the coming decades with an amount that corresponds to 7-10 % of the entire net primary production in all terrestrial ecosystems of the world. Therefore, it is likely that pressure successively will increase substantially, even though other renewable energy production systems show a parallel development towards competitive prices.

The applicability of MCPFE tools

The 4th pan-European criterion for sustainable forest management states the necessity of: “Maintenance, conservation and appropriate enhancement of biological diversity in forest ecosystems”. This criterion is relatively precise and strong. Protection of forest biodiversity is thereby a prerequisite for forest management to be defined as sustainable. Countries that want to claim that their forestry is sustainable in accordance with this criterion must see to that forest-dependent species survive in the landscape and are not on the way to being endangered as a result of forestry. Forest owners and companies that want to claim their forest utilisation is sustainable must contribute to meet this criterion in accordance with the regulations and advice set by the country in which they operate. In conclusion, this criterion must be judged to be sufficient also in a future with stronger biomass demand and new methods of utilization.

What about cases where it is not forestry that threatens the forest biodiversity, but other land-use changes? In certain regions, perhaps agricultural forms of biomass production for energy purposes will become profitable and bring about a new wave of deforestation. Considering the need to protect forest biodiversity, where and under what conditions could such land transformation be acceptable and where must forest be preserved? The 1st pan-European criterion for SFM is about “maintenance and appropriate enhancement of forest resources”. However, in case the MCPFE criteria address forest management only, they will not directly address these cases. In view of the anticipated development this could be considered a gap, however less so for most European countries. So far, woody biomass compete best with fossil fuels for heat and/or electricity production, whereas transport fuels are more easily produced through agriculture systems. The risk that such land transformation could be of economic interest will be higher if incentives are made significantly stronger for replacing oil-based transport fuels with biomass than replacing coal for heat and electricity production.

A related issue is the question of fair competition between biomass production for energy purposes on agricultural land and on forest land. As food production has been considered more important and “off-nature” than wood production, there are less firm regulations on use of fertilisers, pesticides and such for agricultural production in many countries. For most plowed land today, biodiversity protection is not an issue. This issue is however addressed in the new guidelines for afforestation and reforestation (cf Chapter 3), that states that “Woody biomass production systems including short rotation/fast growing plantations should take into account economic, environmental, social and cultural aspects of sustainable management.”

The success of the strategy by which a country is dealing with the 4th criterion depends on the available knowledge. The better the knowledge on what needs various species have in terms of areas of biotopes, substrate, climate, etc and thus which size and types of preserved areas and which restrictions upon forest management and operations are needed, the less “safety margins” are needed to ensure that the 4th criterion is not violated. Therefore pan-European indicators and guidelines have been developed, indicating which factors are most important to consider in protecting forest biodiversity. Indicators are area of forest type, variety of species, area dominated by introduced species, volumes of standing and lying deadwood, areas managed for conservation and utilisation of genetic resources, landscape-level spatial pattern of forest cover,

number of threatened species and areas protected to conserve biodiversity, landscapes and specific natural elements (cf Annex 4). The operational level guidelines (Annex 5) promote key actions such as

- use land-use planning,
- map important forest biotopes including riparian areas and wetland biotopes,
- preserve endemic species and habitats of endangered species,
- use natural regeneration and native species and local provenances are to be preferred if adequate to ensure quality and quantity of the forest resource,
- promote uneven-aged and mixed stands,
- maintain and restore landscape diversity where appropriate,
- cause no lasting damage to ecosystems,
- minimise damage to rare and sensitive species,
- balance grazing pressure,
- leave standing and fallen dead wood hollow trees, old groves and special rare tree species in quantities and distribution,
- protect key biotopes.

The afforestation and reforestation (A/R) guidelines state for example that A/R activities to be promoted are e.g. those that contribute to the improvement and restoration of ecological connectivity and those that use species composition and structural diversity, reflecting the natural diversity at landscape level.

It is difficult to point out any additional factor that is important for forest biodiversity protection and that will need raised awareness as a result of increased demand for biomass for energy purposes, will it introduce increased harvesting in general or new methods like harvesting branches, tops and stumps. When various forms of whole-tree harvesting are conducted, it is important to leave enough dead wood. In regions where the risk for forest fire is high, the extraction of branch wood could reduce this risk and thereby have a secondary positive effect on forest biodiversity. Whole-tree harvesting may also more significantly affect nutrient availability and soil chemistry, which in turn could affect biodiversity. In times when practices are changing and new biomass extraction methods are suggested or introduced, the access to research-based applicable knowledge is crucial for the proper development of regulations and advice concerning where and under what restrictions various utilisation systems could be allowed without threatening biodiversity protection in the landscape. Possibly, this could be stressed in guidelines.

Considering the raised demands for verification from various processes (certification, public procurement, EU energy policy development, etc) that enough consideration be paid to the preservation of biodiversity, it would be difficult to use most of the present indicators together with threshold values, as it varies from country to country and region to region which are the crucial factors to create the required preservation, with the exception of number of endangered species. However, only maintaining or decreasing that number will alone not be sufficient to verify that biodiversity is adequately preserved.

5.3 Protection of soil and water quality

Potential effects of increased demand for bioenergy

In most cases, growth of biomass adds acidity to the soil whereas decomposition consumes acidity and thereby neutralizes the acidification caused by the growth. In soils with low natural buffering capacity (e.g. coarse textured and with no limestone in the mineral composition), an

increased intensity in harvesting that include nutrient-rich tree compartments such as twigs and needles may cause a significant acidification of the site. Harvesting of nutrient rich parts of the trees may also deplete nutrients at a higher rate than they are added to the pool of available nutrients in the soil through processes like weathering, deposition or fixation from the air (nitrogen). Theoretically, these effects could follow from harvesting of stems only. However, whole-tree harvesting could easily increase the average rate of base and nutrient export over the rotation period two or three times. A reduced availability of nitrogen and phosphorous in relation to plant needs cause reduced growth rates directly, whereas too low availability of magnesium and potassium cause needle death as a first step and tree death as a second step.

In agriculture, nutrient depletion causing declining productivity is a direct and economic problem for the farmer and therefore no interference from government is required. In forestry, however, if a certain practice cause reduced or declining productivity, at least in boreal regions this is rather a problem for the next generation. To compensate for such deficits, additions of bases and nutrients may be required, e.g. through ash recycling or with fertilizers. In case such compensatory actions are performed in the wrong way, such action may also cause negative effects on soil chemistry and/or in runoff water.

Another risk could be that the increased traffic of heavy forest vehicles on the site causes soil compaction or spreading of root rot which in turn causes growth reductions.

A practice that contribute to nutrient depletion and increased acidity of run-off water may also affect the species composition of receiving open water ecosystems. Also traditional forestry practices, which may become more common and introduced in new areas, may cause reduced quality of run-off water. Examples are driving near open water that cause outflow of mineral soil and/or organic substances, drainage to improve access or growth, significantly increased rates of decomposition at clear-cut site, use of fertilizers and pesticides, etc. All are actions that may degrade open-water biodiversity and drinking water qualities.

The applicability of MCPFE tools

Four of the pan-European criteria relates more or less directly to these threats:

2. Maintenance of forest ecosystems' health and vitality
3. Maintenance and encouragement of productive functions of forests (wood and non-wood)
4. Maintenance, conservation and appropriate enhancement of biological diversity in forest ecosystems
5. Maintenance, conservation and appropriate enhancement of protective functions in forest management (notably soil and water)

For the protection of open-water biodiversity in water ecosystems that receive water from forests, both the 4th and 5th criteria are relevant, depending on how much part of the "forest ecosystem" the receiving water ecosystem is considered to be. If the runoff water quality is degraded to the extent that biodiversity is damaged downstream, that is not in accordance with the 5th criterion. (Also terrestrial species could be affected by changes in soil chemistry and nutrient availability see subchapter above). The maintenance of site productivity and of stand health and vitality that could be threatened by excessive harvesting of nutrients and buffering capacity is addressed in the 2nd and 3rd criteria. Thus, at the criteria level, MCPFE tools seem sufficient.

Is there enough guidance in indicators and guidelines concerning the risks related to soil and water to assist countries in their development of regulations and policies? Indicators with relevance are 2.2 Soil condition (Chemical soil properties [pH, CEC, C/N, organic C, base saturation] on forest and other wooded land related to soil acidity and eutrophication, classified by main soil types), 2.4 Forest damage, 3.1 Increment and felling, 4.8 Threatened forest species

(in case they include open-water species within the forest landscape) and 5.1 Protective forests – soil, water and other ecosystem functions. The operational level guidelines stress that:

- special key biotopes such as e.g. water sources, wetlands, etc should be protected
- special care should be given to operations on sensitive soils and erosion-prone areas
- special care should be given in forest areas with water protection function to avoid adverse effect on quality and quantity of water resources
- use of chemicals and other harmful substances or inappropriate silvicultural practices influencing water quality in a harmful way should be avoided
- construction of infrastructure should be carried out with due care

The A/R guidelines add that A/R activities should aim to maintain and protect soil and ground and surface water resources in terms of quantity and quality.

In conclusion, most of the activities that may degrade soils and water quality are mentioned, perhaps with the exception of intensive harvesting or whole-tree harvesting. Key terms that are not mentioned are nutrient and acidity budgets. A common protective measure like leaving buffer strips along streams and rivers is not mentioned. Maybe it could also be seen as a deficit that the open-water biodiversity, of streams, rivers, lakes and wetlands, is not mentioned explicitly. The activities that pose threats to soils and water are covered to a more developed extent in the Montreal process and the ITTO indicator list (cf Annex 4) than in the MCPFE list.

Also here, the importance of developing knowledge about relations between various forest operations and effects on soils and waters at the stand as well as at the catchment area or landscape level could be stressed. Lack of knowledge shall not be a valid excuse for not meeting the criteria. However ambitious a follow-up of the indicators may be, it will take long time before insufficient regulation of many forest operations and activities are detected through negative time trends.

Also for the aspects of soil and water quality that concern biodiversity, there is a raised demand for verification from various actors.

5.4 Climate mitigation efficiency

General

Since climate change is such a great threat towards humanity as well as biodiversity, much emphasis must be put on reducing net emissions of greenhouse gases (GHG) and implementing knowledge about GHG emissions into operational guidelines and, if appropriate, various kinds of regulations. Yet, as long as fossil fuels are used to a large extent for energy production, and this will probably be the case at least for another 20-30 years, climate mitigation will not benefit from attempts to avoid the development and use of biomass energy which results in significantly less GHG emissions than fossil fuels in this time perspective. However, if the use of a certain type of bioenergy constantly, or for a very long time ahead, results in emissions that are, say, more than 30-40 % of the emissions compared to the best fossil fuel, there is little reason to treat this bioenergy as carbon free.

For some systems for bioenergy production and consumption, the approximation of zero GHG emissions is not true in the short time perspective, and sometimes not even in the longer term. The negative impact on GHG emission may appear in two different forms.

The **first** type of potential impact is related to land-use or management system conversion in such cases when carbon pools in biomass or soils are being reduced. In severe cases, the conversion bring about large emissions of carbon dioxide, more than what is saved from replacing

fossil fuels with the biomass, for over a hundred years, e.g. through drainage of peatland and even burning of peat at site. In a mild case, such as harvesting of branches and tops, the new practice reduces the pool of decomposing branch material in the forest. It can also be described as that an inevitable emission will appear at an earlier time-point. After fifteen or so years, this advancement makes little difference for the atmosphere. Another case which may vary from mild to more substantial is intensified cultivation of carbon rich soils. Then carbon may be lost from the soil, at high rate at first and then at a declining rate until a new steady-state in soil carbon pool is reached. Again another example is when forest is replaced with agriculture-like production of biomass for energy purposes. If the forest was dense and carbon-rich and the new production system is low-productive, this may be negative from a climate point of view for too long time to be defensible. However, if the forest had a relatively small carbon pool and low biodiversity values, and the new system is a highly efficient deliverer of biomass and does not induce substantial N₂O emissions, this transformation may in fact be a helpful contribution to climate mitigation.

The problem of climate change poses a challenge for finding sustainable ways of using our natural resources. In 20 years time, global society must reach a long way in its transformation away from fossil fuel dominated energy consumption. However, a too narrow perspective concerning transformation changes of carbon stocks in biomass and soil will not be helpful in this process of societal transfer.

The best knowledge about the net effect of new systems for more intensive site preparation or harvesting, e.g. of branches, tops and/or stumps on carbon pools will be gained from replicated long-term field experiments. In most cases, the net effect of such activities has been relatively small and difficult to detect after 20-30 years. At that time, branches, tops and stumps in control plots have decomposed to a high degree, and the site preparation has increased net primary production which evens out the difference². Only when there is a drainage effect on high soil carbon stocks such as in peatland there will be a significant loss of carbon still after 30 years.

The **second** type of potential impact is when high inputs of fossil fuels are being used for the production and/or refinement of a certain biofuel. Such low climate mitigation efficiency of the biofuel production chain is more likely to appear in cases where biofuel production is subsidised or forced to enter the market in other ways. Also, there could be side-effects of intensive fertilisation that lead to constantly high nitrous oxide (N₂O) emissions. In situations where there is a general and high price on GHG emissions, such production systems will be less competitive. In the coming, it will be extremely difficult to combat climate change without internalising the cost for climate change into a general and higher price on GHG emissions, using for example GHG taxes or a more restricted amount of tradable emissions or by other means. Until then, however, there is a need to define limit values for climate mitigation efficiency of the production of bioenergy.

The applicability of MCPFE tools

The 1st of the six basic MCPFE criteria on SFM is: *Maintenance and appropriate enhancement of forest resources and their contribution to global carbon cycles.*

Indicators relevant for the evaluation of observance of this criterion are: Forest Area, Growing stock, Age structure and/or diameter distribution, and Carbon stock (see Annex 3).

² In many cases there will also be secondary effects of whole-tree harvesting. In Nordic countries, it means earlier regeneration and less need for site preparation and in Mediterranean countries it may reduce risk for or severity of forest fires, all of which contribute to preserve carbon stocks.

The 1st criterion is strong in the sense that it does not “allow” deforestation or degradation as a result of forestry or forest operations. This is a basic condition that has to be met, with few exceptions (see below). Otherwise, forest biomass may compare to fossil fuels in terms of “warming effect”. Through the reference to “contribution to global carbon cycles”, the criterion emphasise the net effect of forestry on climate as far as carbon cycles are affected. However, as forestry also could affect other greenhouse gases than carbon dioxide, the lack of reference to “climate change” or “warming effect” could be judged as a certain shortage. Neither could such reference be found in the indicator list nor in the operational level guidelines.

In the operational level guidelines, there is no guidance on how to meet the need to avoid land use and land-use changes with clear net GHG emissions also in a long-term perspective, such as most large-scale drainage. This case, however, is mentioned in the new A/R guidelines.

In a country where harvesting levels increase as a result of demand for biomass, there could even be an initial transformation-type decrease in average stocking and thereby in the carbon pool. In connection to presentations of changes in carbon pools of forests, it is therefore important also to show the delivery of bioenergy from the same forest area and estimate the theoretical displacement of emissions from fossil fuels through this delivery. In the list of indicators for the Montreal Process, there is “Avoided fossil fuel emissions by using harvested wood” (Annex 4).

In the list of indicators for the Montreal Process is also found: “Forest industry carbon emissions”. The motive for presenting these data in this context is not as obvious. These emissions are mainly related to the demand for products made from wood and pulp and is therefore perhaps more relevant in presentations of GHG emissions from various industry sectors than in this connection. The forest industry, like all other industry sectors, must improve energy efficiency and decrease the use of fossil fuels in the production system, though it may be recognised that wood often replace concrete and metals that normally has induced higher GHG emissions when used for the same purpose, and the alternative to paper is often plastics. However, in a possible (near) future where bioenergy is not delivered as a by-product but as one of the main products from the forest industry, knowledge about input fossil fuels in the process will be used to evaluate its “climate mitigation efficiency” profile. It can also be noted that when a price is put on carbon emissions from fossil fuels through carbon taxation or emission trading, replacement of fossil fuels is often first profitable at the forest industries.

So far, the MCPFE tools have mainly addressed activities in the forest. Through the new A/R guidelines, also short-rotation forestry for energy production is clearly addressed. There is now a growing demand for methods to separate bioenergy production systems (from the field to the consumer) with an acceptable “climate mitigation efficiency” from those with too low performance. This is therefore a potential area for extended scope for the MCPFE tools, to contribute to meet the raised demands for verification.

5.5 Other services and goods

Potential effects of increased demand for biomass

Risks: less production and preservation of other values and goods (cultural, recreational and aesthetical values, berries, fruit, game, wood to collect, etc) - for non-forest-owners who utilise various goods and services from natural and seminatural forests and grasslands.

Fishing: In case negative impact on water quality is severe (cf above), the occurrence of valuable fish species could decline.

Tourism/recreation/game: General intensification, new land management systems that challenge the desire for continuity and traditional landscapes and aesthetical values (stump harvesting, soil preparation, several-meter-high instead of one-meter-high crops, a reduction of game populations to counteract severe browsing of many tree species, etc)

The applicability of MCPFE tools

Relevant criteria:

3. Maintenance and encouragement of productive functions of forests (wood and non-wood)
4. Maintenance, conservation and appropriate enhancement of biological diversity in forest ecosystems
5. Maintenance, conservation and appropriate enhancement of protective functions in forest management (notably soil and water)
6. Maintenance of other socio-economic functions and conditions.

Some relevant indicators: Value and quantity of marketed non-wood goods from forest and other wooded land, Value of marketed services on forest and other wooded land, Area of forest and other wooded land where public has a right of access for recreational purposes and indication of intensity of use, Number of sites within forest and other wooded land designated as having cultural or spiritual values.

In case these criteria and relevant operational level guidelines are respected, an intensification of forestry methods would pose no threat to these values. However, it must be admitted that also these values to a certain extent have been maintained due to a lack of profitability of more intensive forest management in many regions. Thus, along with an intensification of forest management would be needed more conscious and knowledge-based strategies for the maintenance of these other services and goods that our forests provide.

5.6 Increased risk of forest damage

A higher frequency of pest outbreaks could follow from

- loss of biodiversity including populations of natural enemies,
- more trade with non-refined biomass that may spread insects and pathogens to new regions of the world.

Concerning the risk for loss of biodiversity - see 5.2. This should not be a severe effect if MCPFE guidelines are followed and the 4th criterion is met.

There are risks for spreading of potential pest-creating organisms (insects, pathogens, nematodes, etc) already today when non-barked wood is traded between different regions of the world. These risks will increase further with increased trade with biomass for energy: especially as it may become increasingly profitable to market dead wood from outbreaks of insects or pathogens. Also in normal harvesting, the qualities which are too low quality for traditional forest industries may first become available on the international market of biomass for energy purposes. Risks are reduced if the material is debarked and even more if it is chipped or pelletized. Overall, these risks could be counteracted through further development and implementation of phyto-sanitary regulations at the global level and by development of “closed” systems for storage of imported biomass. At present, the MCPFE tools do not address activities outside the forest. However, as it is forests that are at risk, it could be considered a possibility that MCPFE would address also these aspects in future guidelines.

6. Conclusions and suggested amendments and additional tools

General

It is highly likely that increased demand for various forms of bioenergy will follow from developed global climate mitigation policies over the coming years and decades.

The present MCPFE tools already address most of the potential risk connected to intensive management and new methods for biomass extraction. For the scope and purposes that present tools were created, no severe gaps were found. Yet there are a range of “new” problems which additional MCPFE tools could possibly contribute to solve and which could motivate additional tools and possibly increased responsibilities.

Guidelines concerning mitigation and adaptation

First, the development of scientific knowledge about net influence of new and intensified methods on forest environment and values must speed up in many countries. No matter how good intentions and goals, if knowledge is lacking, the best strategies for how to avoid negative impacts cannot be identified. This is a message that could be included in new guidelines.

Also because of the growing understanding of forests roles in the work of mitigating climate change and the growing needs for adaptation to climate change, there is a need for improved MCPFE guidance on these two topics. Some guiding principles could assist in balancing between the sometimes contradicting options for using forests for mitigation. Guidelines could also serve a list of aspects to consider in the work of adapting forest management to a changing climate.

Climate mitigation efficiency is a complicated question. Among other questions, it must be concluded how to treat the issue of “payback time” when a land-use change aimed at increasing the delivery of bioenergy causes initial carbon stock losses. For this purpose we judge it is useful not to have a too narrow time and space perspective when judging options - to avoid letting “the best be the enemy of the good”. Through its familiarity with forestry, long-term rotation periods and large areas, MCPFE could make a contribution in this discussion. In 20-30 years time, global society must reach a long way in its transformation away from fossil fuel dominated energy consumption. This will be difficult and all cost-effective alternatives for energy production will be helpful to meet this challenge, provided they are sufficiently climate mitigation efficient in the 50-100-year time perspective. Consequently, a too short-term perspective concerning transformation changes of carbon stocks in biomass and soil will be counterproductive in this process of societal transfer. Finally, it should be remembered that such limited reductions of carbon stocks in biomass and/or soils are reversible. Whenever this energy would be no longer demanded, any reduced carbon stocks can move to the larger level again.

Demand for verification of SFM

There is now an obvious demand for sustainable forest management to be a legally binding demand also for imported products, especially for various biofuels (cf Annex 6), but to a growing extent also for traditional forest products (cf the FLEGT process). At present, several organisations processes are developing sets of minimum requirements. In some cases they are quite contradictory to the concept of SFM and the demand of protection of biodiversity and other services and goods at the landscape level, with a national responsibility for the overall strategy of the protection of productivity, biodiversity and other services and goods. It could be a progressive step for MCPFE to contribute to the development of such minimum require-

ments, and to try to make them more compatible with the MCPFE philosophy and principles (as well as corresponding processes for SFM criteria development such as the Montreal Process and ITTO).

As a start, such minimum SFM criteria could deal with maintenance of forest resources, preservation of forest biodiversity and climate mitigation efficiency. One question that needs an answer in this context is “who can and shall be responsible for what? Potential users could be institutions, organisations and processes working with developing rules for biomass for energy purposes or biomass-based fuels or electricity (traded or used within the producer country).

Considering the raised demands for verification from various processes (certification, public procurement, EU energy policy development, etc) that enough consideration must be paid to the preservation of biodiversity, as stated in the gap analysis it would be difficult to use most of the present indicators together with threshold values, as it varies from country to country and region to region which are the crucial factors to create the required preservation.

- For the indicator “endangered species (and extinct)”, a threshold demand could be there should be no increase in number over time (out of presently known domestic species).

However, only maintaining or decreasing the number of endangered species will alone not be sufficient to verify that biodiversity is adequately preserved, because it would then be possible to have a general deterioration of the ecosystems of many common and semi-common species for a long time without violating such limit.

- Thus, also needed is probably a general (independent?) evaluation of whether enough considerations are taken at district/state/landscape level to maintain viable populations³ of all forest-depending species in the landscape, for which several of the existing indicators could be formulated threshold values with local, regional or national application.

Negative impact on nutrient and acid-base balances could in some cases affect water ecosystem biodiversity and future site productivity. Also for these aspects have therefore sometimes been formulated verifiable demands on low impact. (A possible minimum requirement could be that forest biomass extraction should not result in large-scale losses of available nutrients or acid buffering capacity at the landscape level over several decades, compared to the natural status⁴. As stated in the gap analysis, general inventory data would not be sufficient to fully meet this criterion, as the impact of forest biomass extraction cannot easily be sorted out from other environmental changes. Data and trends from inventories must be combined with analysis of data from research, in which the effect of biomass harvesting on nutrient and acid/base balances can be isolated. In case nutrient compensation of other elements than N is needed, ash recycling should be given priority before using finite resources. *OBSERVE- not discussed before*)

A minimum requirement for climate mitigation efficiency of land management methods could be;

- Only accepted shall be land management methods for increased biomass production at a certain piece of land which do not result in GHG emissions higher than 30 % of the po-

³ At least as viable as today

⁴ In regions with high N deposition, a net loss of N could be considered environmentally advantageous. In case nutrient compensation of other elements than N is needed, ash recycling should be given priority before using finite resources.

tential emissions of fossil fuel⁵ if used for the same energy purpose in a 50-year perspective, in relation to the average for former land use⁶.

The MCPFE criteria, indicators and guidelines are already in use in Europe, through government implementation and voluntary certification. Because the criteria, indicators and commitments are developed and agreed upon through participation by various stakeholders within the MCPFE process, an MCPFE contribution has political support as well as acceptance by stakeholders.

Potential additional indicators

Possibly two additional indicators could be added to the existing set of MCPFE list of indicators to picture climate mitigation efficiency of forest biomass production

- Area of land management methods for increased biomass production at a certain piece of land which will most likely result in GHG emissions higher than 30 % of the potential emissions of fossil fuel⁷ if used for the same energy purpose in a 50-year perspective, in relation to the average for former land use⁸.
- Potential substitution benefit from domestic and imported forest-derived bioenergy (compare with Montreal Process).

Stronger engagement in balance between forests and other land uses

Since the on-going development could include a potential for further deforestation in some regions in which agro-cultivation of biofuels may become profitable, MCPFE could develop its engagement in the balance between forest and other land use, with special focus on the biodiversity protection and restoration aspect. Areas which are not used for any other land use today could well be subjected to governmental policies for reforestation activities, aiming to increase the production of a mixture of forest values (cf MCPFE Afforestation/Reforestation Guidelines).

Engagement in refinement stage?

The refinement stage is normally judged to be beyond the scope of MCPFE, whose mandate is traditionally viewed ends at the boarder of the forest. In some cases high amount of fossil fuels have been used for refinement of the biomass, thereby reducing the climate mitigation efficiency of the biofuel. However, all such cases are a result of biofuels being subsidized instead of given a better competitiveness through raised costs for carbon dioxide emissions from fossil fuel combustion, through carbon taxes or emission right trading. Since the latter must be the more sound and effective way to proceed forward with general climate policies, it is judged that these fossil-fuel intensive refinement systems for biofuels will soon be phased out anyway.

⁵ Coal or transportation fuel based on coal should be used as the fossil reference when substitution gains are calculated.

⁶ New compared to old steady-state average carbon stock in biomass and soil plus net increase in emissions of nitrous oxide and methane over rotation period

⁷ Coal or transportation fuel based on coal should be used as the fossil reference when substitution gains are calculated.

⁸ New compared to old steady-state average carbon stock in biomass and soil plus net increase in emissions of nitrous oxide and methane over rotation period

ANNEX 1: Suggestion of Pan-European Guidelines for Climate Change Adaptation and Mitigation in Forest Management

Draft, May 26

(For illustration, to facilitate discussions of the option of developing MCPFE guidelines on climate change mitigation/adaptation. It is not intended that the Working Group will discuss the concrete content in Uppsala, 11-12 June 2009).

Background and Scope

The IPCC (to be developed)

Conclusions from TAR..

Climate change poses major threats towards production in many regions and biodiversity globally, but in some regions also possibilities for increased prod...

Global action to mitigate climate change will likely lead to a continued growth of the global demand for bioenergy, and possibly also for wood as a construction material, as it is mostly produced at low energy cost. Such increased demands may potentially contribute to economic development in many rural areas around the world. In case incomes are distributed within society, for less wealthy regions this development may also contribute to poverty reduction and thereby lead to reduced sensitivity for climate change. On the other hand, this increased demand for bioenergy has also been shown to lead to increased competition for land and deforestation in certain regions where agricultural production of energy crops becomes profitable, and intensified forestry practices in countries with a fore-running development. These Pan-European Guidelines intend to help finding a sound balance between development, climate change mitigation and other values of the forest for some of these new problems that climate change bring along. The technical guidelines are intended to be used as a check-list for aspects to be considered at adaptation of forest management to a changing climate.

These Pan-European Guidelines supplement the existing MCPFE commitments and tools to implement sustainable forest management, in particular the General Guidelines for Sustainable Forest Management in Europe (MCPFE, Resolution H1) and the Pan European Operational Level Guidelines (PEOLG, MCPFE, Annex 2 of Resolution L2). They can also be seen as a frame for the Pan-European Guidelines for Afforestation and Reforestation with special focus on the provisions of the UNFCCC (Guidelines Aff/Ref). They support synergies in the implementation of decisions of the United Nations Forum on Forests (UNFF), UNFCCC, CBD, United Nations Convention on Combating Desertification (UNCCD) and other relevant forest-related international commitments and aim at contributing to the achievement of relevant internationally agreed goals.

General Guidelines

1. Pan-European Criteria and Indicators for Sustainable Forest Management (SFM) should be used as an overall framework for actions taken to mitigate and adapt to climate change.
2. These guidelines should be considered in national policies and programmes related to forests and forestry (e.g. National Forest Programmes), biodiversity (e.g. National Biodiversity Strategies and Action Plans), climate change, energy, land use planning and management, integrated water resources management and agriculture.
3. Synergies in the national and regional implementation of international commitments under UNFF, UNFCCC, CBD and UNCCD should be promoted when carrying out mitigation activities and taking measures aiming at adaptation.
4. It should be recognized that changing patterns of calamity risks and markets for biomass demand will require a development of adapted forest management and protection strategies.
5. An increase in regional or global demand for bioenergy may lead to new forms of intensified forestry measures. This calls for a continuous research to answer questions about effects on nutrient balances, acid buffering capacity, biodiversity, productivity of wood, other services and values, etc. to form a scientific basis for governmental regulations and good-practice guidelines.
6. An increase in regional or global demand for bioenergy may further lead to increased deforestation or in favor of agricultural energy crop production in certain regions of the world. This calls for conscious governmental strategies and instruments to ensure survival of biodiversity at the landscape level. In other regions, an increased demand for biomass for energy may promote afforestation or reforestation (cf Guidelines Aff/Ref).
7. Effective information-sharing and cross-sectoral cooperation between relevant authorities and stakeholders involved should be provided for strategies and measures related to adaptation.
8. Economic, environmental, social and cultural impacts of suggested adaptation strategies and measures should be broadly assessed, as appropriate, in consultation with the researcher community and with stakeholders.
9. When evaluating various mitigation options, all significant negative and positive effects on greenhouse gas emissions and *albedo*, should be considered. It should be recognized that mitigation actions aiming at increasing carbon stocks in soils and/or biomass require long-term responsibility and maintenance costs to secure permanence. Mitigation strategies should be analyzed in a long-term perspective to ensure their contribution to reducing the climate change is likely to be sufficiently permanent.
10. Mitigation strategies should take into account economic, environmental, social and cultural aspects of sustainable management in a long-term perspective and avoid

such measures for carbon sequestration in managed forests that reduce freedom for coming generations to manage forests according to future conditions.

11. Management measures that reduce carbon stocks in soils and/or biomass significantly in relation to the substitution potential of the gain in biomass production should be avoided. Drainage of pristine peatland will normally show a negative net effect for climate due to the magnitude of peat decomposition.
12. Most likely, global action to mitigate climate change will lead to a continued growth of the global demand for bioenergy and energy-efficient construction materials. Mitigation measures that lead to increased biomass production, *inter alia* in the form of well-planned afforestation/reforestation or improved silviculture methods, therefore have a raised chance of leading to a permanent change in land use.
13. A legal framework for securing regeneration after harvesting will strongly contribute to secure permanence for mitigation measures in the form of afforestation and reforestation, and should therefore be a minimum requirement for the recognition of these activities as efficient mitigation within a country.

Technical guidelines for adaptation

..to be developed..

14. A continuous development of knowledge through research and analyses is needed about probable changes and possible threats resulting from various scenarios for climate change, and about possible adaptation measures.
15. Adapted strategies for biodiversity protection
16. Improved fire control – adapted land-use management, regional cooperation
17. Counteracting increased risk for pests, including risks connected to trade with non-refined biomass
18. Counteracting risks for other calamities (storm-felling, land-slides, flooding, etc)
19. Adapted choice of tree species and provenances
20. Adapted choices of silvicultural regimes
21. Adaption to warmer and wetter winters and non-frozen conditions in boreal forestry – forest and road transports
22. Adapted measures for social values, including cultural heritage

ANNEX 2: Suggestion of MCPFE recommendations for generally applicable minimum requirements on sustainable forest management, with special focus on bioenergy and climate mitigation

Draft 20 May

(For illustration, to facilitate discussions of the option of developing MCPFE minimum requirements in Uppsala, 11-12 June 2009)

1. Maintenance and appropriate enhancement of forest resources and their contribution to global carbon cycles

The 1st MCPFE criterion for sustainable forest management requires the “maintenance and appropriate enhancement of forest resources and their contribution to global carbon cycles”.

A suggestion for a minimum requirement for maintenance of the forest resource is: Unless sufficient regeneration comes naturally, actions to ensure forest regeneration must be taken within x years after a significant harvesting has been conducted that has brought an area from above to below the limits of the FAO definition on forest. The regeneration shall make it highly probable that the new stand will meet the FAO forest definition within 20 years. Exception can be made if the land use is changed, within the x year, but as soon as this new land use is abandoned, the regeneration plight shall again be applicable. A regulation that has these or stronger requirements must be part of the country’s legislation and its obedience must be ensured through sufficient measures.

Because of the long-term character of the climate change problem and the high quantities of fossil fuels that need to be replaced or saved, a sufficient “payback time” must be allowed to new bioenergy extraction or production methods that result in an initial carbon stock loss after land conversion. Otherwise options to replace fossil fuels at a reasonable cost and with yet a very positive net effect for climate within a reasonable time will be left out. On the other hand too large losses that will not be “paid back” through substitution within a century or more must be prohibited.

A suggestion for a minimum requirement on climate mitigation efficiency at any land conversion is: New land management or methods for increased biomass production at a certain piece of land should not result in GHG emissions higher than 30 % of the potential emissions of fossil fuel⁹ used for the same energy purpose in a 50-year perspective in relation to the average for former land use¹⁰.

Such threshold value would mean that a low-productive non-dense forest, such as is often found on abandoned farmland in large parts of Europe, could be exchanged with short-term rotation forestry when that is considered profitable, whereas an old-grown, non-used and highly carbon dense forest could normally not. Stump harvesting will be enough efficient in most

⁹Coal or transportation fuel based on coal should be used as the fossil reference when substitution gains are calculated.

¹⁰New compared to old steady-state average carbon stock in biomass and soil plus net increase in emissions of nitrous oxide and methane over rotation period

cases. A loss of a peat layer or organic matter holding 25 ton C (a few cm peat) could then pass in most cases, whereas a loss of a 50 ton C will be above the limit for most cases, depending on net effects on the other GHG gases, the loss or gain in aboveground biomass and the new rate of delivery of biomass.

The refinement stage is traditionally beyond the scope of MCPFE, whose tools are focused on sustainable forest management. In some cases high amount of fossil fuels have been used for refinement of the biomass, thereby reducing the climate mitigation efficiency of the biofuel. However, all such cases are a result of biofuels being subsidized instead of given a better competitiveness through raised costs for carbon dioxide emissions from fossil fuel combustion, through carbon taxes or trading with emission permits. Since the latter must be the more sound and effective way to proceed forward with general climate policies, we suggest that these fossil-fuel dependent refinement systems must soon be phased out or improved towards efficiency anyway.

2. Maintenance, conservation and appropriate enhancement of biological diversity in forest ecosystems

To be able to use the MCPFE 4th criterion for sustainable forest management, i.e. “maintenance, conservation and appropriate enhancement of biological diversity in forest ecosystems”, as a basis for legally binding agreements is needed a minimum requirement for how to meet this criterion.

A suggestion of such minimum requirement is as follows: enough measures must be taken to ensure that all naturally occurring species survive in viable populations at the landscape level, with only “defendable” exceptions. Since many rare species of natural reasons will be endangered and their populations will never be fully “viable”, this criterion must be combined with a criterion that the number of endangered species should not increase over time because of direct human impact¹¹.

In case such definition (or a similar) would be used as bases for a legally binding text, some kind of independent control function must be developed. Probably also “landscape level” must be somehow defined (suggestion: 1-5 million hectares) as well as a “starting time” (suggestion: 1 Jan 2009). Ecosystems and species in affected run-off water shall be included.

The government should be held ultimately responsible for the overall protection strategy and land-owners and operators will be responsible for following regulations and recommendations given by the government as guidance for how and where various ecosystems and species shall be preserved. Naturally, the preservation of most species can be ensured through an ecosystem approach. Threshold values for various critical biodiversity related MCPFE indicators could then be used locally or at the national level in the verification process.

¹¹ Out of species that were listed as domestic the starting date. Climate change would have to be considered an indirect impact.

ANNEX 3: Relationship between globally agreed thematic elements of sustainable forest management (UNFF 2004) and criteria as developed by MCPFE, Montreal Process and ITTO

Internationally agreed common thematic elements of sustainable forest management (UNFF Resolution 4/3, 2004)	MCPFE criteria (Lisbon resolution L2, 1998)	Montreal Process (Proposed Revised Indicators, Draft - for review and comment, dated February 10, 2006)	ITTO, International Tropical Timber Organisation (ITTO Policy Development Series No 15, 2005)
1. Extent of forest resources	Maintenance and Appropriate Enhancement of Forest Resources and their Contribution to Global Carbon Cycles (MCPFE C1)	Maintenance of forest contribution to global carbon cycles (MP C5)	Extent and condition of forests (ITTO C2)
2. Biological diversity	Maintenance, Conservation and Appropriate Enhancement of Biological Diversity in Forest Ecosystems (MCPFE C4)	Conservation of biological diversity (MP C1)	Biological diversity (ITTO C5)
3. Forest health and vitality	Maintenance of Forest Ecosystem Health and Vitality (MCPFE C2)	Maintenance of ecosystem health and vitality (MP C3)	Forest ecosystem health (ITTO C3)
4. Productive functions of forest resources	Maintenance and Encouragement of Productive Functions of Forests, Wood and Non-Wood (MCPFE C3)	Maintenance of productive capacity of forest ecosystems (MP C2)	Forest production (ITTO C4)
5. Protective functions of forest resources	Maintenance and Appropriate Enhancement of Protective Functions in Forest Management, notably soil and water (MCPFE C5)	Conservation and maintenance of soil and water resources (MP C4)	Soil and water protection (ITTO C6)
6. Socio-economic functions	Maintenance of other socio-economic functions and conditions (MCPFE C6)	Maintenance and enhancement of long term multiple socio-economic benefits to meet the needs of societies (MP C6)	Economic, social and cultural aspects (ITTO C7)
7. Legal, policy and institutional framework	MCPFE qualitative indicators A. Overall policies, institutions and instruments for sustainable forest management B. Policies, institutions and instruments by policy area	Legal, institutional and economic framework for forest conservation and sustainable management (MP C7)	Enabling conditions for sustainable forest management (ITTO C1)

ANNEX 4. Globally agreed “thematic element of sustainable forest management” and criterion with indicators under the Montreal Process and ITTO, structured according to the six MCPFE criteria and the qualitative indicators

MCPFE Criterion 1: Maintenance and Appropriate Enhancement of Forest Resources and their Contribution to Global Carbon Cycles UNFF 2004: Thematic element 1. Extent of forest resources Montreal Process Criterion 5: Maintenance of forest contribution to global carbon cycles ITTO Criterion 2: Extent and condition of forests		
MCPFE Indicators	Montreal Process Indicators	ITTO indicators
1.1 Area of forest and other wooded land, classified by forest type and by availability for wood supply, and share of forest and other wooded land in total land area 1.2 Growing stock on forest and other wooded land, classified by forest type and by availability for wood supply 1.3 Age structure and/or diameter distribution of forest and other wooded land, classified by forest type and by availability for wood supply 1.4 Carbon stock of woody biomass and of soils on forest and other wooded land	5.a Total forest ecosystem carbon pools and flux 5.b Total forest product carbon pools and flux 5.c Forest industry carbon emissions 5.d Avoided fossil fuel emissions by using harvested wood	2.1 Extent (area) and percentage of total land area under comprehensive land-use plans 2.2 Extent (area) of forests committed to production and protection (on protection, cf. MCPFE C 4.9, 5.1 and 5.2) 2.3 Extent (area) and percentage of total land area under each forest type 2.4 Percentage of PFE boundaries physically demarcated 2.5 Changes in forest area 2.6 Forest condition
MCPFE Criterion 2: Maintenance of Forest Ecosystem Health and Vitality UNFF 2004: Thematic element 3. Forest health and vitality Montreal Process Criterion 3 : Maintenance of ecosystem health and vitality ITTO Criterion 3: Forest ecosystem health		
2.1 Deposition of air pollutants on forest and other wooded land, classified by N, S and base cations 2.2 Chemical soil properties (pH, CEC, C/N, organic C, base saturation) on forest and other wooded land related to soil acidity and eutrophication, classified by main soil types 2.3 Defoliation of one or more main tree species on forest and other wooded land in each of the defoliation classes “moder-	3.a Area of forest affected by biotic processes beyond reference conditions 3.b Area of forest affected by abiotic agents beyond reference conditions	3.1 Extent and nature of forest encroachment, degradation and disturbance caused by humans and the control procedures applied 3.2 Extent and nature of forest degradation and disturbance due to natural causes and the control procedures applied

<p>ate”, “severe” and “dead” 2.4 Forest and other wooded land with damage, classified by primary damaging agent (abiotic, biotic and human induced) and by forest type</p>		
<p>MCPFE Criterion 3: Maintenance and Encouragement of Productive Functions of Forests, Wood and Non-Wood. UNFF 2004: Thematic element 4. Productive functions of forest resources Montreal Process Criterion 2: Maintenance of productive capacity of forest ecosystems ITTO Criterion 4: Forest production</p>		
<p>3.1 Balance between net annual increment and annual fellings of wood on forest available for wood supply 3.2 Value and quantity of marketed roundwood 3.3 Value and quantity of marketed non-wood goods from forest and other wooded land 3.4 Value of marketed services on forest and other wooded land 3.5 Proportion of forest and other wooded land under a management plan or equivalent</p>	<p>2.a Area of forest land and net area of forest land available for wood production 2.b Total growing stock and annual increment of both merchantable and non-merchantable tree species in forests available for wood production 2.c The area and growing stock of plantations of native and exotic species 2.d Annual removal of wood volume compared to volume determined to be sustainable 2.e Annual removal of non-wood forest products compared to the level determined to be sustainable</p>	<p>Resource assessment 4.1 Extent and percentage of forest for which inventory and survey procedures have been used to define the quantity of the main forest products 4.2 Actual and sustainable harvest of wood and non-wood forest products 4.3 Composition of harvest 4.4 Total amount of carbon stored in forest stands (cf. MCPFE-I-1.4) Planning and control procedures 4.5 Existence and implementation of: (a) forest harvesting/operational plans (within forest management plans); and (b) other harvesting permits (small-, medium- and large-scale permits without forest management plans) 4.6 Extent of compartments/coupes harvested according to: (a) harvesting/operational plans; and (b) any other harvesting/cutting permit 4.7 Existence of a log-tracking system or similar control mechanism 4.8 Long-term projections, strategies and plans for forests production 4.9 Availability of historical records on the extent, nature and management of forests Silvicultural and harvesting guidelines 4.10 Availability and implementation of silvicultural guidelines for timber and non-wood forest products 4.11 Availability and implementation of harvesting guidelines</p>

		lines for timber and non-wood forest products 4.12 Area over which silvicultural and harvesting guide- lines are effectively implemented
MCPFE Criterion 4: Maintenance, Conservation and Appropriate Enhancement of Biological Diversity in Forest Ecosystems UNFF 2004: Thematic element 2. Biological diversity Montreal Process Criterion 1: Conservation of biological diversity ITTO Criterion 5: Biological diversity		
4.1 Area of forest and other wooded land, classified by number of tree species occurring and by forest type 4.2 Area of regeneration within even-aged stands and uneven-aged stands, classified by regeneration type 4.3 Area of forest and other wooded land, classified by “undisturbed by man”, by “semi-natural” or by “plantations”, each by forest type 4.4 Area of forest and other wooded land dominated by introduced tree species 4.5 Volume of standing deadwood and of lying deadwood on forest and other wooded land classified by forest type 4.6 Area managed for conservation and utilisation of forest tree genetic resources (in situ and ex situ gene conservation) and area managed for seed production 4.7 Landscape-level spatial pattern of forest cover 4.8 Number of threatened forest species, classified according to IUCN Red List categories in relation to total number of forest species 4.9 Area of forest and other wooded land protected to conserve biodiversity, landscapes and specific natural elements, according to MCPFE Assessment Guidelines	1.1 <i>Ecosystem diversity</i> 1.1.a Area of forest by forest type by age class or successional stage, and forest ownership or tenure 1.1.b Area of forest by forest type in protected areas defined by age class or successional stage 1.1.c Fragmentation of forests 1.2 <i>Species diversity</i> 1.2.a The number of known forest associated species for which ecological information is available. 1.2.b The number and status of forest associated species at risk as determined by legislation or scientific assessment. 1.2.c Status of in situ and ex situ efforts focused on conservation of species diversity 1.3 <i>Genetic diversity</i> 1.3.a Number of forest associated species at risk from isolation and the loss of genetic variation 1.3.b Population levels of selected representative forest associated species to describe genetic diversity 1.3.c Status of in situ and ex situ efforts focused on conservation of genetic diversity	<i>Ecosystem diversity</i> 5.1 Protected areas containing forests 5.2 Protected areas connected by biological corridors or ‘stepping stones’ <i>Species diversity</i> 5.3 Existence and implementation of procedures to identify and protect endangered, rare and threatened species of forest-dependant flora and fauna 5.4 Number of endangered, rare and threatened forest-dependant species <i>Genetic diversity</i> 5.5 Measures for in situ and/or ex situ conservation of genetic variation within commercial, endangered, rare and threatened species of forest flora and fauna <i>Procedures for biodiversity conservation in production forests</i> 5.6 Existence and implementation of procedures for the protection and monitoring of biodiversity in production forests by: (a) retaining undisturbed areas; (b) protecting rare, threatened and endangered species; (c) protecting features of special biological interest (eg nesting sites, seed trees, niches, keystone species, etc); and (d) assessing recent changes in (a), (b) and (c) above through inventories, monitoring/assessment programs and comparison with control areas 5.7 Extent and percentage of production forest that has been set aside for biodiversity conservation

MCPFE Criterion 5: Maintenance and Appropriate Enhancement of Protective Functions in Forest Management, notably soil and water UNFF 2004: Thematic element 5. Protective functions of forest resources Montreal Process Criterion 4: Conservation and maintenance of soil and water resources ITTO Criterion 6: Soil and water protection		
<p>5.1 Area of forest and other wooded land designated to prevent soil erosion, to preserve water resources, or to maintain other forest ecosystem functions, part of MCPFE Class "Protective Functions"</p> <p>5.2 Area of forest and other wooded land designated to protect infrastructure and managed natural resources against natural hazards, part of MCPFE Class "Protective Functions"</p>	<p><i>4.1 Protective function</i></p> <p>4.1.a Area of forest whose designation or land management focus is the protection of soil or water resources</p> <p><i>4.2 Soil</i></p> <p>4.2.a Area of forest subject to forest management activity that is deemed at risk of [irreversible] significant soil disturbance</p> <p>4.2.b Degree of compliance with locally applicable, enforceable legislation, regulations and policies on soil disturbance and degradation</p> <p>4.2.c Area of forest with [persistent [significant] degradation [processes]] [significant][irreversible] [adverse] [soil disturbance and/or degradation]</p> <p><i>4.3 Water</i></p> <p>4.3.a Area of forest subject to [harvest related] [forest] management activities that could result in significant impact on water quantity, or biological or physical qualities</p> <p>4.3.b Degree of compliance with locally applicable, enforceable legislation, regulations and policies on harvesting and road construction, stream crossing and riparian zone management that address water quality, quantity and timing</p> <p>4.3.c Area of water bodies, or stream length, in forest areas with significant change in physical or biological properties from reference conditions</p>	<p><i>Extent of protection</i></p> <p>6.1 Extent and protection of total forest area managed exclusively for the protection of soil and water</p> <p>6.2 Procedures to ensure the protection of downstream catchment values</p> <p><i>Protective functions in production forests</i></p> <p>6.3 Procedures to protect soil productivity and water retention capacity within production forests</p> <p>6.4 Procedures for forest engineering, including:</p> <ul style="list-style-type: none"> (a) drainage requirements; (b) conservation of buffer strips along streams and rivers; (c) protection of soils from compaction by harvesting machinery (d) protection of soils from erosion during harvesting operations <p>6.5 Extent and percentage of areas in production PFE that have been defined as environmentally sensitive (eg very steep or erodible) and protected</p>

MCPFE Criterion 6: Maintenance of other socio-economic functions and conditions UNFF 2004: Thematic element 6. Socio-economic functions Montreal Process Criterion 6: Maintenance and enhancement of long term multiple socio-economic benefits to meet the needs of societies ITTO Criterion 7: Economic, social and cultural aspects		
<p>6.1 Number of forest holdings, classified by ownership categories and size classes</p> <p>6.2 Contribution of forestry and manufacturing of wood and paper products to gross domestic product</p> <p>6.3 Net revenue of forest enterprises</p> <p>6.4 Total expenditures for long-term sustainable services from forests</p> <p>6.5 Number of persons employed and labour input in the forest sector, classified by gender and age group, education and job characteristics</p> <p>6.6 Frequency of occupational accidents and occupational diseases in forestry</p> <p>6.7 Consumption per head of wood and products derived from wood</p> <p>6.8 Imports and exports of wood and products derived from wood</p> <p>6.9 Share of wood energy in total energy consumption, classified by origin of wood</p> <p>6.10 Area of forest and other wooded land where public has a right of access for recreational purposes and indication of intensity of use</p> <p>6.11 Number of sites within forest and other wooded land designated as having cultural or spiritual values</p>	<p>6.1 <i>Production and consumption</i></p> <p>6.1.a Value and volume of wood and wood products</p> <p>6.1.b Value and quantities of production of non-wood forest products</p> <p>6.1.c Value of forest based services</p> <p>6.1.d Production and consumption and import/export of wood products</p> <p>6.1.e Production and consumption and import/export of non wood products</p> <p>6.1.f Degree of recycling of forest products and utilization of byproducts [wastes]</p> <p>6.2 <i>Recreation and tourism</i></p> <p>6.2.a Area of forests available for a variety of public recreation and tourism demands</p> <p>6.2.b Number of visits attributed to recreation and tourism</p> <p>6.3 <i>Investment in the forest sector</i></p> <p>6.3.a Value of investment in forest management, wood and non-wood product industries, forest-based services, recreation and tourism</p> <p>6.3.b Value of investment in research and development, and education</p> <p>6.4 <i>Cultural, social and spiritual needs and values</i></p> <p>6.4.a Area of forests managed to protect the range of cultural, social and spiritual needs and values</p> <p>6.4.c Non consumptive use of forest values</p> <p>6.5 <i>Employment and community needs</i></p> <p>6.5.a Direct and indirect employment rates in the forest sector</p> <p>6.5.b Workforce health and welfare (wellbeing)</p> <p>6.5.c Resilience of forest dependent communities, including indigenous communities</p> <p>6.5.d Area of forests used for subsistence purposes</p> <p>6.6 <i>Social equity - distribution of benefits</i></p> <p>6.6.a Area of forest by legal right of use</p>	<p><i>Socioeconomic aspects</i></p> <p>7.1 Value and percentage contribution of the forestry sector to gross domestic product (GDP)</p> <p>7.2 Value of domestically produced wood, non-wood forest products and environmental services in:</p> <p>(a) domestic markets;</p> <p>(b) export markets; and (c) informal markets including subsistence and illegal activities (estimate)</p> <p>7.3 Forest products' industry structure and efficiency</p> <p>7.4 Existence and implementation of mechanisms for the equitable sharing of costs and benefits of forest management</p> <p>7.5 Existence and implementation of conflict-resolution mechanisms for resolving disputes between forest stakeholders</p> <p>7.6 Number of people depending on forests for their livelihoods</p> <p>7.7 Training, capacity-building and manpower development programs for forest workers</p> <p>7.8 Existence and implementation of procedures to ensure the health and safety of forest workers</p> <p>7.9 Area of forests upon which people are dependant for subsistence uses and traditional and customary lifestyles</p> <p>7.10 Number and extent of forest sites available primarily for:</p> <p>(a) research and education; and</p> <p>(b) recreation</p> <p><i>Cultural aspects</i></p> <p>7.11 Number of important archaeological, cultural and spiritual sites identified and protected</p> <p><i>Community and indigenous peoples' rights and participation</i></p> <p>7.12 Extent to which tenure and user rights of communities and indigenous peoples over publicly owned</p>

	6.6.b Distribution of economic benefits from the wood [and non-wood forest] products industry	forests are recognized and practised 7.13 Extent to which indigenous knowledge is used in forest management planning and implementation 7.14 Extent of involvement of indigenous peoples, local communities and other forest dwellers in forest management capacity-building, consultation processes, decision making and implementation
MCPFE qualitative indicators UNFF 2004: Thematic element 7. Legal, policy and institutional framework Montreal Process Criterion 7: Legal, institutional and economic framework for forest conservation and sustainable management ITTO Criterion 1: Enabling conditions for sustainable forest management		
A. Overall policies, institutions and instruments for sustainable forest management A.1 National forest programmes or similar A.2 Institutional frameworks A.3 Legal/regulatory frameworks and international commitments A.4 Financial instruments/economic policy A.5 Informational means B. Policies, institutions and instruments by policy area B.1 Land use and forest area and OWL (crit. 1) B.2 Carbon balance (crit.1) B.3 Health and vitality (crit. 2) B.4 Production and use of wood (crit. 3) B.5 Production and use of non-wood goods and services, provision of especially recreation (crit. 3) B. 6 Biodiversity (crit. 4) B. 7 Protective forests and OWL (crit. 5) B.8 Economic viability (crit. 6) B.9 Employment, incl. safety and health (crit. 6)	7.1.a Legislation and policies supporting the sustainable management of forests 7.1.b Cross sectoral policy and programme coordination 7.2.a Taxation and other economic strategies that affect the sustainable management of orests 7.3.a Clarity and security of land and resource tenure and property rights 7.3.b Enforcement of laws related to forests 7.4.a Programmes, services and other resources supporting the sustainable management of forests 7.4.b Development and application of research and technologies for the sustainable management of forests 7.5.a Partnerships to support the sustainable management of forests 7.5.b Public participation and conflict resolution in forest-related decision making 7.5.c Monitoring, assessment and reporting on progress towards sustainable management of forests	<i>Policy, legal and governance framework</i> 1.1 Existence and implementation of policies, laws and regulations to govern forest management 1.2 Forest tenure and ownership Economic framework 1.3 Amount of funding in forest management, administration, reaserch and human resource development 1.4 Existence and implementation of economic instruments and other incentives to encourage sustainable forest management <i>Institutional framework</i> 1.5 Structure and staffing of institutions responsible for sustainable forest management 1.6 Number of professional and technical personell at all levels to perform and support forest management 1.7 Existence of communication strategies and feedback mechanisms to increase awareness of sustainable forest management 1.8 Existence of, and ability to apply, appropriate technology to practise sustainable forest management and the efficient utilization and marketing of forest products

<p>B. 10 Public awareness and participation (crit. 6) B.11 Research, training and education (crit. 6) B.12 Cultural and spiritual values (crit. 6)</p>		<p><i>Planning framework</i> 1.9 Capacity and mechanisms for planning sustainable forest management and for periodic monitoring, evaluation and feedback on progress 1.10 Public participation in forest management planning, decision-making, datacollection, monitoring and assessment 1.11 Existence of forest management plans (cf. MCPFE I 3.5)</p>
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References:

MCPFE criteria adopted in 1998 (Resolution L2) and the improved indicators endorsed in 2003 (annexed to Vienna Declaration).

UNFF 2004 refer to the seven thematic elements of sustainable forest management, drawn from the criteria identified by criteria and indicator processes, and offering "a reference framework for sustainable forest management", cf. United Nations Forum on Forests Resolution 4/3, 2004.

Montreal Process criteria and indicators are found in Proposed Revised Indicators, Draft - for review and comment, dated February 10, 2006.

ITTO criteria and indicators refer to Revised ITTO criteria and indicators for the sustainable management of tropical forests including reporting format (ITTO Policy Development Series No 15, 2005).

ANNEX 5. Pan-European Operational Level Guidelines



ANNEX 2 OF THE RESOLUTION L2 Pan-European Operational Level Guidelines for Sustainable Forest Management

The Operational Level Guidelines form a common framework of recommendations that can be used on a voluntary basis and as a complement to national and/or regional instruments to further promote sustainable forest management at the field level, on forest areas in Europe.

Adopted at the Fifth Expert Level Preparatory Meeting of the Lisbon Conference on the Protection of Forests in Europe, 27-29 April 1998, Geneva Switzerland.

1. INTRODUCTION

Forests in Europe grow in a wide and diverse range of ecological conditions, from boreal to Mediterranean and from alpine to lowlands. These forests have been influenced by human settlement and action over the centuries, and in some countries planted forests constitute a major part of the resource. Forest management in Europe is characterized by a large proportion of private, fragmented, small-scale farm-related ownership structures in the majority of countries, as well as a large proportion of public forests and forests owned by private forest enterprises in others.

Forest management takes place within clearly established ownership rights and with a long history of national/regional laws and regulations based on long-term planning. Thus, the concept of sustainability has a long tradition in forestry in Europe. However, the meaning of 'sustainable forest management' has developed over time according to the changing needs of

society. Originally, sustainability in forest management was mainly considered as the sustained yield of timber to cope with historic wood shortages. However, the importance of other multiple functions of forests have gradually been incorporated in forest management. During the 1980's the concern about the deterioration of forests throughout Europe led to an increasing awareness of the economic, ecological, social and cultural values of forests by the broader public. Nowadays many important aspects of sustainable forest management are covered by national and/or regional laws and regulations and are already being regularly monitored.

The wish for a concerted effort at a political level to protect and further improve the sustainable management of European forests led to the First Ministerial Conference on the Protection of Forests in Europe held in Strasbourg in 1990. At the Second Ministerial Conference, held in Helsinki in 1993, the ministers responsible for forestry in Europe embraced the internationally accepted UNCED¹² Forest Principles, taking a further step in the history of the concept of sustainable forest management by adopting, *inter alia*, Resolution H1 "General Guidelines for Sustainable Management of European Forests" and Resolution H2 "General Guidelines for the Conservation of the Biodiversity of European Forests". These General Guidelines represent the political commitment of the signatory states of the Helsinki Resolutions by providing a general policy direction and a long-term goal to meet the demands on European forests for multiple goods and services in a manner that is consistent with their sustainable management, and conservation and enhancement of their biological diversity.

A new, common definition of 'sustainable forest management' was laid down in Resolution H1:

'the stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems'

For the follow-up and the implementation of the General Guidelines, the pan-European national level criteria and indicators¹³ were adopted at the expert level within the Follow-Up Process of the Helsinki Ministerial Conference in 1994. They are a policy instrument for evaluating and reporting progress towards sustainable forest management, as described in Resolution H1, in individual European countries and in Europe as a whole.

The six pan-European criteria for sustainable forest management are:

1. Maintenance and appropriate enhancement of forest resources and their contribution to global carbon cycles;
2. Maintenance of forest ecosystem health and vitality;
3. Maintenance and encouragement of productive functions of forests (wood and nonwood);
4. Maintenance, conservation and appropriate enhancement of biological diversity in forest

¹² United Nations Conference on Environment and Development, Rio de Janeiro, 1992.

¹³ **Criteria** characterise or define the essential elements or set of conditions or processes by which sustainable forest management may be assessed. The direction of change within each criterion is shown by periodically measured **indicators**.

- ecosystems;
5. Maintenance and appropriate enhancement of protective functions in forest management (notably soil and water); and
 6. Maintenance of other socio-economic functions and conditions.

The Pan-European Operational Level Guidelines have been elaborated to further promote sustainable forest management in Europe by translating the international commitments down to the level of forest management planning and practices. They represent a common framework of recommendations for reference at the field level that can be used on a voluntary basis. These Guidelines are directly based on Resolutions H1 and H2, and they follow the structure of the six pan-European criteria that were identified as the core elements of sustainable forest management. For clarity they are divided into 'Guidelines for Forest Management Planning' and 'Guidelines for Forest Management Practices', focusing on basic ecological, economical and social requirements for sustainable forest management within each criterion.

The Pan-European Operational Level Guidelines are designed to be applied in the context of, and in full respect to, national and/or regional instruments and actions. They cannot be used in isolation to determine sustainability in forest management. Their purpose is to identify complementary actions at the operational level which will further contribute to sustainability of forest management. This should reflect national, economic, ecological, social and cultural conditions, research and traditional knowledge, and must respect forest and environmental legislation, decisions on protected areas, other general principles, as well as codes for forest practice such as standards used for forest management in any given country.

The effective implementation of these Guidelines implies recognizing the major role and the legal rights of forest owners. Furthermore, the implementation of sustainable forest management in the field requires continuous extension, training and education of forest managers, owners and workers, for which the Pan-European Operational Level Guidelines can provide an important reference.

2. POTENTIAL USES OF THE PAN-EUROPEAN OPERATIONAL LEVEL GUIDELINES

In general, the Pan-European Operational Level Guidelines are designed for sub-national applications at a practical level. Whenever used, their content should be adapted to the specific local, economic, ecological, social and cultural conditions, as well as to the respective forest management and administrative systems already in place; in this process participation of all interested parties should be encouraged. Therefore, all guidelines may not necessarily be relevant for all levels, all types of forest, or ownership categories.

In order to facilitate the implementation of these voluntary Guidelines, there might be a need for the promotion and equitable support by government, society and other beneficiaries to create and maintain a sound balance of interests including a sound economic basis for forestry.

The potential applications and users of the Pan-European Operational Level Guidelines are:

- **Forest managers and forest owners**

The Guidelines can assist forest managers and forest owners in planning and implementing improved sustainable management practices and operations in the field. They can be used for increasing communication and awareness in relation to the evolving concept of sustainable forest management and the desired actions at the operational level amongst forest owners, managers, employees, contractors or others.

- **Sub-national organisations**

The sub-national (regional or local) organisations can use the guidelines as a reference tool in informing and advising forest owners and forest managers, in planning the practices and/or in supervising their implementation. These types of organisations include, for example, sub-national administrative forestry organisations and forest owners or management associations.

- **National/governmental decision makers**

The Guidelines can be used as an internationally agreed framework for the guidance of forest management bringing the commitments made in the international policy *fora* (UNCED Forest Principles and Helsinki Resolutions) down to the field level. They can serve as a reference for setting codes for forest practice and forest management planning.

- **International forest dialogue**

The Guidelines form a European reference to the global forest dialogue. They can contribute, as an instrument representing consensus within the Pan-European Process, to the achievement of further consensus on sustainable management of all types of forests on a global scale.

- **Communication tools and certification systems**

These guidelines can serve as a tool to improve communication and awareness building related to sustainable forest management. In addition, although certification and other quality assurance systems or programmes as such would remain independent from the Pan-European Process and are voluntary to the interested parties, the Guidelines could provide an indicative reference for the establishment of standards for those systems.

3. PAN-EUROPEAN OPERATIONAL LEVEL GUIDELINES FOR SUSTAINABLE FOREST MANAGEMENT

CRITERION 1. Maintenance and appropriate enhancement of forest resources and their contribution to global carbon cycles

<p>1.1 Guidelines for Forest Management Planning</p>
<ul style="list-style-type: none">a. Forest management planning should aim to maintain or increase forest and other wooded area, and enhance the quality of the economic, ecological, cultural and social values of forest resources, including soil and water. This should be done by making full use of related services such as land-use planning and nature conservation.b. Inventory and mapping of forest resources should be established and maintained, adequate to the local and national conditions, and in correspondence with the topics described in these Guidelines.c. Management plans or their equivalents, appropriate to the size and use of the forest area, should be elaborated and periodically updated. They should be based on legislation as well as existing land use plans, and adequately cover the forest resources.d. Monitoring of the forest resources and evaluation of their management should be periodically performed, and their results should be fed back into the planning process.
<p>1.2 Guidelines for Forest Management Practices</p>
<ul style="list-style-type: none">a. Forest management practices should safeguard the quantity and quality of the forest resources in the medium and long term by balancing harvesting and growth rates, and by preferring techniques that minimise direct or indirect damage to forest, soil or water resources.b. Appropriate silvicultural measures should be taken to maintain the growing stock of resources at - or bring to - a level that is economically, ecologically and socially desirable. <p>Conversion of abandoned agricultural and treeless land into forest land should be taken</p> <ul style="list-style-type: none">c. into consideration, whenever it can add economic, ecological, social and/or cultural value.

CRITERION 2. Maintenance of forest ecosystem health and vitality

<p>2.1 Guidelines for Forest Management Planning</p> <ul style="list-style-type: none">a. Forest management planning should aim to maintain and increase the health and vitality of forest ecosystems and to rehabilitate degraded forest ecosystems, whenever this is possible by silvicultural means.b. Health and vitality of forests should be periodically monitored, especially key biotic and abiotic factors that potentially affect health and vitality of forest ecosystems, such as pests, diseases, overgrazing and overstocking, fire, and damage caused by climatic factors, air pollutants or by forest management operations.c. Forest management plans or their equivalents should specify ways and means to minimise the risk of degradation of and damages to forest ecosystems. Forest management planning should make use of those policy instruments set up to support these activities.
<p>2.2 Guidelines for Forest Management Practices</p> <ul style="list-style-type: none">a. Forest management practices should make best use of natural structures and processes and use preventive biological measures wherever and as far as economically feasible to maintain and enhance the health and vitality of forests. Adequate genetic, species and structural diversity should be encouraged and/or maintained to enhance stability, vitality and resistance capacity of the forests to adverse environmental factors and strengthen natural regulation mechanisms.b. Appropriate forest management practices such as reforestation and afforestation with tree species and provenances that are suited to the site conditions or the use of tending, harvesting and transport techniques that minimise tree and/or soil damages should be applied. The spillage of oil through forest management operations or the indiscriminate disposal of waste on forest land should be strictly avoided.c. The use of pesticides and herbicides should be minimised, taking into account appropriate silvicultural alternatives and other biological measures.d. In case fertilisers are used they should be applied in a controlled manner and with due consideration to the environment.

CRITERION 3. Maintenance and encouragement of productive functions of forests (wood and non-wood)

3.1 Guidelines for Forest Management Planning
<ul style="list-style-type: none">a. Forest management planning should aim to maintain the capability of forests to produce a range of wood and non-wood forest products and services on a sustainable basis.b. Forest management planning should aim to achieve sound economic performance taking into account possibilities for new markets and economic activities in connection with all relevant goods and services of forests.c. Forest management plans or their equivalents should take into account the different uses or functions of the managed forest area. Forest management planning should make use of those policy instruments set up to support the production of merchantable and non-merchantable forest goods and services.
3.2 Guidelines for Forest Management Practices
<ul style="list-style-type: none">a. Forest management practices should be ensured in quality with a view to maintain and improve the forest resources and to encourage a diversified output of goods and services over the long term.b. Regeneration, tending and harvesting operations should be carried out in time, and in a way that do not reduce the productive capacity of the site, for example by avoiding damage to retained stands and trees as well as to the forest soil, and by using appropriate systems.c. Harvesting levels of both wood and non-wood forest products should not exceed a rate that can be sustained in the long term, and optimum use should be made of the harvested forest products, with due regard to nutrient offtake.d. Adequate infrastructure, such as roads, skid tracks or bridges should be planned, established and maintained to ensure efficient delivery of goods and services while at the same time minimising negative impacts on the environment.

CRITERION 4. Maintenance, conservation and appropriate enhancement of biological diversity in forest ecosystems

4.1 Guidelines for Forest Management Planning

- a. Forest management planning should aim to maintain, conserve and enhance biodiversity on ecosystem, species and genetic level and, where appropriate, diversity at landscape level.
- b. Forest management planning and terrestrial inventory and mapping of forest resources should include ecologically important forest biotopes, taking into account protected, rare, sensitive or representative forest ecosystems such as riparian areas and wetland biotopes, areas containing endemic species and habitats of threatened species, as defined in recognised reference lists, as well as endangered or protected genetic *in situ* resources.

4.2 Guidelines for Forest Management Practices

- a. Natural regeneration should be preferred, provided that the conditions are adequate to ensure the quantity and quality of the forests resources and that the existing provenance is of sufficient quality for the site.
- b. For reforestation and afforestation, origins of native species and local provenances that are well adapted to site conditions should be preferred, where appropriate. Only those introduced species, provenances or varieties should be used whose impacts on the ecosystem and on the genetic integrity of native species and local provenances have been evaluated, and if negative impacts can be avoided or minimised.
- c. Forest management practices should, where appropriate, promote a diversity of both horizontal and vertical structures such as uneven-aged stands and the diversity of species such as mixed stands. Where appropriate, the practices should also aim to maintain and restore landscape diversity.
- d. Traditional management systems that have created valuable ecosystems, such as coppice, on appropriate sites should be supported, when economically feasible.
- e. Tending and harvesting operations should be conducted in a way that do not cause lasting damage to ecosystems. Wherever possible, practical measures should be taken to improve or maintain biological diversity.
- f. Infrastructure should be planned and constructed in a way that minimises damage to ecosystems, especially to rare, sensitive or representative ecosystems and genetic reserves, and that takes threatened or other key species - in particular their migration patterns - into consideration.
- g. With due regard to management objectives, measures should be taken to balance the pressure of animal populations and grazing on forest regeneration and growth as well as on biodiversity.
- h. Standing and fallen dead wood, hollow trees, old groves and special rare tree species should be left in quantities and distribution necessary to safeguard biological diversity, taking into account the potential effect on health and stability of forests and on surrounding ecosystems.
- i. Special key biotopes in the forest such as water sources, wetlands, rocky outcrops and ravines should be protected or, where appropriate, restored when damaged by forest practices.

CRITERION 5. Maintenance and appropriate enhancement of protective functions in forest management (notably soil and water)

<p>5.1 Guidelines for Forest Management Planning</p>
<ul style="list-style-type: none">a. Forest management planning should aim to maintain and enhance protective functions of forests for society, such as protection of infrastructure, protection from soil erosion, protection of water resources and from adverse impacts of water such as floods or avalanches.b. Areas that fulfil specific and recognised protective functions for society should be registered and mapped, and forest management plans or their equivalents should take full account of these areas.
<p>5.2 Guidelines for Forest Management Practices</p>
<ul style="list-style-type: none">a. Special care should be given to silvicultural operations on sensitive soils and erosion-prone areas as well as on areas where operations might lead to excessive erosion of soil into watercourses. Inappropriate techniques such as deep soil tillage and use of unsuitable machinery should be avoided on such areas. Special measures to minimise the pressure of animal population on forests should be taken.b. Special care should be given to forest management practices on forest areas with water protection function to avoid adverse effects on the quality and quantity of water resources. Inappropriate use of chemicals or other harmful substances or inappropriate silvicultural practices influencing water quality in a harmful way should be avoided.c. Construction of roads, bridges and other infrastructure should be carried out in a manner that minimises bare soil exposure, avoids the introduction of soil into watercourses and that preserve the natural level and function of water courses and river beds. Proper road drainage facilities should be installed and maintained.

CRITERION 6. Maintenance of other socio-economic functions and conditions

<p>6.1 Guidelines for Forest Management Planning</p> <ul style="list-style-type: none">a. Forest management planning should aim to respect the multiple functions of forests to society, have due regard to the role of forestry in rural development, and especially consider new opportunities for employment in connection with the socio-economic functions of forests.b. Property rights and land tenure arrangements should be clearly defined, documented and established for the relevant forest area. Likewise, legal, customary and traditional rights related to the forest land should be clarified, recognised and respected.c. Adequate public access to forests for the purpose of recreation should be provided taking into account the respect for ownership rights and the rights of others, the effects on forest resources and ecosystems, as well as the compatibility with other functions of the forest.d. Sites with recognised specific historical, cultural or spiritual significance should be protected or managed in a way that takes due regard of the significance of the site.e. Forest managers, contractors, employees and forest owners should be provided with sufficient information and encouraged to keep up to date through continuous training in relation to sustainable forest management.
<p>6.2 Guidelines for Forest Management Practices</p> <ul style="list-style-type: none">a. Forest management practices should make the best use of local forest related experience and knowledge, such as of local communities, forest owners, NGOs and local people.b. Working conditions should be safe, and guidance and training in safe working practice should be provided.c. Forest management operations should take into account all socio-economic functions, especially the recreational function and aesthetic values of forests by maintaining for example varied forest structures, and by encouraging attractive trees, groves and other features such as colours, flowers and fruits. This should be done, however, in a way and to an extent that does not lead to serious negative effects on forest resources, and forest land.

ANNEX 6. Developments and processes addressing sustainable production of bioenergy

1. Introduction

Because of the fast development of bioenergy extraction and production chains, concerns have been raised about how this will affect biodiversity and how effective they actually are in terms of climate change mitigation. The climate change mitigation efficiency can be lowered either because high amounts of fossil fuels are used for their production and/or refinement or because a preceding land-use conversion result in large carbon and/or other greenhouse gas emissions. Apart from a development of national legislation and good-practice guidelines to prevent such negative effects, these concerns has also resulted in several examples of international cooperation on developing criteria and indicators for sustainable bioenergy production and systems for assuring that certain minimum requirements are being met in the energy production.

Below is presented short descriptions of some of these international processes addressing sustainability of production of biomass, with references to further information.

2. Processes for legally binding commitments

European Commission – The renewable energy directive (RED) and biofuel quality directive

The European Community (EC) has established an overall binding target of a 20% share of renewable energy sources in energy consumption and a 10% binding minimum target for biofuels in transport to be achieved by each Member State, as well as binding national targets by 2020 in line with the overall EU target of 20%.

Faced with the concern about the sustainability of biofuels, the European Commission has developed minimum requirements in relation to certain potential environmental impacts for biofuels used for transports, which were adopted in a directive in December 2008. An on-going analysis of whether similar requirements should be developed also for biomass used for electricity and heating purposes will report to the EU parliament in December 2009. As wood is at present the most important source of renewable energy, this is bound to influence the rules of the game for the forest sector in Europe and in countries from where biomass for energy production is being imported.

Within the EU, there are other processes that possibly, in one way or the other, will refer to the criteria developed for the RED (e.g. EC process for public procurement, EU Eco-labelling, EU FLEGT, CEN – EU standard).

In the RED, a general criterion states that the greenhouse gas emission saving from the use of the fuel should be at least 35 %, which means that fossil fuels used for the production/refinement should not emit more than 65 % of the emissions that are avoided when the biofuel is consumed (*must be checked*). Concerning land-use change, biofuels (to be accounted for when meeting targets) shall not come from wetlands transferred from a natural to a drained status or from land that was deforested after January 2008. Carbon losses in soils caused by changes in the cultivation system should be divided over 20 years and accounted for in the minimum limit of 35 % savings in a 20-year-long time perspective (*check*).

National initiatives and legislation concerning sustainable and renewable fuels

The UK obligation for blending: (http://www.opsi.gov.uk/si/si2007/pdf/uksi_20073072_en.pdf)

include in paragraph 13 that the Administrator may require a transport fuel supplier to provide information as to the effects on carbon emissions, agriculture, other economic activities, sustainable development, or the environment generally which are or may be associated with the production, supply or use of the renewable transport fuel which has been supplied.

3. Public procurement policies

Public procurement policies aim at ensuring that all products stem from sustainable and/or legal sources. Procurement policies on wood and other forest products are being developed at national (e.g. UK, Netherlands, Sweden) and European level.

4. Cooperation on sustainability of biomass between countries, organisations, etc

Roundtable on Sustainable Biofuels: an initiative of the EPFL Energy Center, Lausanne, Switzerland

The Roundtable on Sustainable Biofuels is an international initiative bringing together farmers, companies, non-governmental organizations, experts, governments, and inter-governmental agencies concerned with ensuring the sustainability of biofuels production and processing. It has a multi-stakeholder steering board consisting of mainly company representatives, but also representatives from the UN Environment Programme, some NGO:s, (e.g. WWF) and Swiss and Dutch ministries. A draft standard has been produced that is largely based on work already conducted by the Forest Stewardship Council, the Dutch Cramer Commission, the Low Carbon Vehicle Partnership in the UK, the Roundtable on Sustainable Palm Oil, the ILO's Decent Work agenda, the Sustainable Agriculture Network, the Better Sugarcane Initiative, and other sustainable agriculture initiatives (Version zero of August 2008) that includes a principle level and a guiding criteria level:

<http://cgse.epfl.ch/page65660-en.html>

Nordic Council of Ministers – Sustainable biomass from forestry and agriculture

During spring 2008, representatives from the ministry or national agency level, NGO:s, land owner organisations and research in Sweden, Finland, Denmark and Norway participated in a time-limited project to discuss and develop common guidelines for sustainable biomass production at a Nordic level. The project was lead by agencies for forestry and agriculture under the Swedish Ministry of Agriculture. Criteria for biodiversity protection, climate mitigation efficiency were also suggested. A report was produced that will be printed by the Nordic Council of Ministers secretariat. (www.norden.org)

IRGC - Risk governance guidelines for bioenergy policies

The International Risk Governance Council (IRGC) is an independent foundation based in Switzerland whose purpose is to identify and propose recommendations for the governance of emerging global risks. In a year-long project, the opportunities and risks of bioenergy have been examined, deficits in the governance of those risks have been identified, and recommendations for improvements to the risk governance of bioenergy have been developed (www.irgc.org).

The Forest Dialogue (TFD) was initiated by the World Business Council on Sustainable Development (WBCSD), World Resources Institute (WRI) and International Union for Conservation of Nature (IUCN) in 1999. The TDF steering committee consists of representatives for forestry companies and NGOs and international organisations (e.g. ITTO, Global Forest Partners, International Alliance of Indigenous and Tribal Peoples of the Tropical Forests, The World Bank, Building and Woodworkers' International, CEPF, The Nature Conservancy, WWF, Friends of the Earth- Amazonia) and research institutes (e.g. World Resources Institute, Australian National University).

Its aim is to promote sustainable forest management by providing a platform for dialogue and confidence building between different forest stakeholders such as environmental and social groups, businesses, forest owners, labour unions, indigenous people and international organisations. TFD's initiative to address forestry and climate change was launched during COP 13 in Bali 2007. It aims to produce a statement that addresses the way forests may be included in a post-Kyoto deal concerning Reducing Emissions from Deforestation and Degradation (REDD). One major concern of TFD is that forests risk being treated as mere "sticks of carbon" rather than a multi-functional and multi-value asset on which hundreds of millions of people depend. Unless addressed with a sustainable forest management (SFM) approach, particularly taking into account the critical importance of governance and users' rights, REDD is likely to fail according to TFD. The suggested declaration (Sept 2008 version) included six principles:

1. Ensure that forest-related action for climate change mitigation and adaptation complement and give impetus to sustainable development;
2. Tackle the main drivers of deforestation, which mostly lie outside the forest sector;
3. Recognize and remove barriers to transparent, inclusive, and accountable forest governance;
4. Respect and support local processes that clarify and strengthen tenure, property, and carbon rights;
5. Support balanced approaches to mitigation and adaptation strategies in both forest-rich and forest-poor countries;
6. Provide substantial additional funding to build the capacity of countries, communities, and forest managers and owners to participate in forest-related climate change mitigation and adaptation initiatives.

and can be downloaded at: <http://research.yale.edu/gisf/tfd/index.html>

5. Standardisation

In 2006, the Dutch government has asked a national group of experts to define principles and criteria for the sustainable production of biomass; the so-called Cramer criteria after the chair of that group. The Cramer principles and criteria are divided in six themes:

1. greenhouse gas emissions balance,
2. competition with food, local energy supply, medicine and construction materials,
3. biodiversity (no adverse effects on protected areas or valuable ecosystems),
4. environment (management of waste, erosion, water and emissions),
5. prosperity,
6. social well-being (social, human and property rights).

The task of the project group was to formulate principles and criteria for the production and the processing of biomass for energy, transport fuels and chemistry. The aim was that these could be made applicable to food, feed and fuel. In parallel or shortly thereafter UK and German governments have initiated similar activities in the attempt to introduce more sustainable bio-

mass on their internal market. From the 15th of April 2008, UK suppliers of biofuels in the transport sector need to report the product's sustainability.

CEN, the standard development organisation of EU, is conducting a process for development of standards for sustainably produced biomass for energy application “(CEN/TC 383)biofuels”. CEN had a plan to produce a proposal for a standard that include minimum requirements for biomass production until September 2009, however this time plan is now delayed. According to the initial plan, the technical committee of CEN will elaborate on a European meta-standard for sustainable produced biomass for transport fuels and energy production applications. This meta-standard allows users to check for the sustainability themes as laid down by the Dutch (Cramer), the British (RTFO), the German (BSO) and the European (RED) authorities. This means the set shall include definitions, basic requirements, principles, criteria and possibly indicators for sustainability assessment (including a fossil fuel and GHG balance), and ways to assess them in relation to biomass produced, supplied or used.

6. Certification

The total area of forests certified globally has increased steadily from less than 25 million hectares in 1998 to 275 million hectares in 2006, the latter constituting 7.6% of the world's forests (Stupak et al, in prep). The Programme for the Endorsement of Forest Certification (PEFC www.pefc.org), an umbrella organization that endorses a large number of previously independent national initiatives (e.g., Canadian Standards Association (CSA) and Sustainable Forestry Initiative (SFI)), accounts for 69% of global certified forests and the Forest Stewardship Council (FSC www.fsc.org) accounts for another 28%.

The Nordic Ecolabel: Nordic requirements for ecolabelled transport fuels was published in June 2008 (www.svanen.nu)

7. Research and development projects

There is also a range of past and present investigations and research projects in which these issues are being examined. Examples of this include:

“How much bioenergy can Europe produce without harming the environment”
(http://reports.eea.europa.eu/eea_report_2006_7/en)

EUROFORENET: European forest energy network (www.euroforenet.eu) is an ELO action supported by the European Commission, Directorate General of the Environment. Its goal is to stimulate and encourage the co-operation between both private and public stakeholders, in order to improve efficiency at a local level in forest-wood-energy supply chains in various Member States of the EU. The main objectives are to propose a set of recommendations, tools and guidelines for both private and public decision makers, in order to promote energy-oriented sustainable forest management, as well as to support the benefits of wood energy in general. EUROFORENET used two tools to achieve these objectives: a communication campaign and a platform of experts who developed a practical guide. It also incorporates scientific tools, such as the one developed by FAO - Forestry Department, Wood Energy "WISDOM" (Woodfuel Integrated Supply / Demand Overview Mapping). EUROFORENET is also an awarded partner of the Sustainable Energy Campaign by the European Commission DG Energy and Transport.

Guidelines can be downloaded:

<http://www.euroforenet.eu/wp-content/uploads/File/EUROFORENET%20guidelines.pdf>

MAKE-IT-BE is a new ELO project (starting after the Summer of 2008) forming a follow-up of the EUROFORENET initiative and co-financed by the Intelligent Energy Europe pro-

gramme supported by the European Commission, DG for Energy and Transport. Involving partners from Italy, Slovenia, Austria, Belgium and the UK, this high-level project will develop "decision making and implementation tools for the delivery of local and regional Bio-energy chains". This 36-month action aims at providing feasible solutions for countryside managers on the ground with a view to help member states implementing their EU renewable energy targets.

EFORWOOD: The aim of the project is to provide methods and tools that will integrate Sustainability Impact Assessment of the whole European Forestry-Wood Chain (FWC), by quantifying performance of FWC, using indicators for all three pillars of sustainability; environmental, economic and societal. www.eforewood.com.

WOOD-EN-MAN (www.flec.kvl.dk/wood-en-man)

In the EU Life project RecAsh (www.recash.info), the final international seminar with participants from more than ten European countries resulted in a set of recommendations:

<http://www.recash.info/uploads/documents/Recommendations%20RecAsh%20Workshop%20061011.pdf>

APPENDIX 4

MCPFE OPEN-ENDED AD-HOC WORKING GROUP ON “SUSTAINABILITY CRITERIA” FOR FOREST BIOMASS PRODUCTION, INCLUDING BIOENERGY

CONSULTANCY PAPER

Feasibility assessment of using MCPFE tools for public procurement policies and sustainability requirements in the EU RES directive

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17 May 2009

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1. Goal of the analysis

Analyze the areas of correspondences, possible linkages, as well as gaps, in current MCPFE tools in comparison to the public procurement policy of the EU and the EU RES Directive in both matters of content (proposed sustainability criteria), as well as procedure (verification of sustainability). Based on the findings, suggestions and proposals will be made, with possible examples, for reformulation of sustainability criteria based on MCPFE tools for the RES-D and PPP or other policies related to forests and forest products. Special attention will be given to the climate change and carbon issues related to forest and forest products. The material for this assessment is based on the most up-to-date documentation of MCPFE discussions, EU Directives on renewable energy, PPP communications and other PPP material such as PPP toolkits and country initiatives on public procurement, forest certification documents and various other scientific materials and national and international discussions on those subjects.

2. Requirements for sustainability of wood based products in EU

21. Public Procurement Policy (PPP) in the EU

The European Commission's communication regarding public procurement for a better environment was released on 16th of July 2008. The general objective of the Green Public Procurement (GPP) guidelines is to provide guidance on how to reduce the environmental impact caused by public sector consumption and to stimulate innovation in environmental technologies, products and services. It is estimated that governmental purchasing accounts for up to 16% of the EU gross domestic product.

The public procurement procedures will be developed to become mandatory in the form of a Directive. Some recent proposals also aim at establishing criteria, which will be useful for the Directive on the promotion of the use of energy from renewable sources. This Directive includes sustainability criteria for biofuels and bioliquids and may involve, in the future, the setting up of sustainability criteria for biomass production, including forest biomass.

A preliminary set of common GPP criteria has been established as the framework for the Training Toolkit on Green public procurement. Criteria have been developed for product and service groups in 10 sectors which have been identified as the most suitable for implementing GPP. Out of these, four sectors (construction, paper, furniture and energy) are relevant regarding wood and wood-based products. Wood is addressed within the context of all four of these priority sectors, but only one coherent set of criteria will be used. GPP rules will have an impact on the whole supply chain of products (raw materials – production methods – packaging – recycling). The PPP approach for wood differs from other sectors in the way that wood products cover all three types of criteria (ecological, economical and social), which are considered relevant for that sector.

The GPP criteria distinguish between "core" and "comprehensive" criteria. **Core GPP criteria** address the most significant environmental impacts, and are designed to be used with minimum additional verification effort or cost increases. **Comprehensive GPP criteria** are intended for use by authorities who seek to purchase the best environmental products available on the market, and may require additional administrative efforts or imply a certain cost increase as compared to other products fulfilling the same function.

The aspects of "**legality**" and "**sustainability**" are the main factors by which the systems differ: whether a system requires the supplied timber to come (a) only from a legal source or (b) be both legal and sustainable. In order to gradually move towards both legally and sustainably harvested wood (sustainable is considered to better assure the observance of environmental and social aspects compared to the implementation of the legality principle) compliance with the sustainability criteria is proposed as an award criterion.

The PPP rules currently emphasize the verification issues, while the legal and sustainable principles are not defined. From the verification it can be concluded that the concept of sustainable forest management is the basic approach for both principles.

Example: Furniture Core GPP for wood and wood-based material

Legality:

All wood and wood-based material shall come from legally sourced timber

Verification:

"Certificates of chain of custody for the wood certified as FSC, PEFC or any other equivalent means of proof, will be accepted as proof of compliance. The legal origin of wood can also be demonstrated with a tracing system being in place. These voluntary systems may be third-party certified, often as part of ISO 9000 and/or ISO 14000 or EMAS management system.

If wood stems from a country that has signed a Voluntary Partnership Agreement (VPA) with the EU, the FLEGT licence may serve as proof of legality.

For the non-certified wood bidders shall indicate the types (species), quantities and origins of the wood used in the pulp and paper production, together with a declaration of their legality. As such the wood shall be able to be traced throughout the whole production chain from the forest to the product.

In specific cases, where the evidence provided is not considered sufficient to prove compliance with the requested technical specifications, contracting authorities may ask suppliers for further clarifications or proof."

Sustainability

Award criteria (additional points will be awarded for sustainable forest management, as expressed

The percentage of the final product made of wood, wood fibres or wood particles stemming from forests that are verified as being managed so as to implement the principles and measures aimed at ensuring sustainable forest management, on condition that these criteria characterize and are relevant for the product.

In Europe, these principles and measures shall at least correspond to those of the Pan-European Operational Level Guidelines for Sustainable Forest Management, as endorsed by the Lisbon Ministerial Conference on the Protection of Forests in Europe (2 to 4 June 1998). Outside Europe they shall at least correspond to the UNCED Forest Principles (Rio de Janeiro, June 1992) and, where applicable, to the criteria or guidelines for sustainable forest management as adopted under the respective international and regional initiatives (ITTO, Montreal Process, Tarapoto Process, UNEP/FAO Dry-Zone Africa Initiative).

Verification:

Certificates of chain of custody for the wood certified as FSC, PEFC or any other sustainable forest management standard will be accepted as proof of compliance. Any other appropriate means of proof, such as a technical dossier of the manufacturer will also be accepted. Please note: In case of paper manufactured from virgin wood fiber all products carrying the European Ecolabel or the Nordic Swan will be deemed to comply.

22. National development of Public Procurement

Six EU member states; the United Kingdom, the Netherlands, Belgium, Denmark, Germany and France have independently developed national public procurement policies. The majority of these national public timber procurement policies cover both wood and paper products, except Belgium and Germany. These public procurement policies are mandatory, at least on the national/federal level, except Denmark.

Both aspects of "legality" and "sustainability" are included in these policies, but differ between countries. For the schemes in Denmark, the Netherlands and the UK timber must come from a legal source, in Belgium timber must originate from sustainable sources while in France and Germany it must come from sources that are both legal and sustainable.

National criteria for defining legality and sustainability have been developed. In the Netherlands these aspects will be evaluated based on 75 criteria. The five main areas evaluated for assuring the legality in forest operations are: legal harvest rights, compliance with national and local laws on forest management, environment and labor, tenure rights, payment of all relevant royalties and taxes, compliance with CITES and control of illegal activities.

Requirements for sustainability in forests are broad: legality, forest health and vitality, production functions of forest resources, protection functions of forest resources, biological diversity, extent of forest resources, social requirement and forest management aspects. Also requirements for standard setting are set. It means that these main criteria correspond nearly fully with the MCPFE criteria.

Verification of the aspects of "legality" and "sustainability" is performed 1) by certification (PEFC, FSC or national schemes), 2) by other evidence with varied approaches or 3) by VPAs (Voluntary Partnership Agreements) - FLEGT licenses as possible evidence of compliance with the legality criterion (in the United Kingdom).

The certification schemes (including the four phases: certification, certification scheme governance, accreditation, chain of custody and labelling) are evaluated using two differing approaches (approaches to developing criteria, which define legality and sustainability): Belgium, the Netherlands, the United Kingdom and Denmark apply the principle that the public authority sets a baseline, against which existing individual certification schemes are screened and rated. In the United Kingdom the Government Department DEFRA has set up a Central Point of Expertise on Timber (CPET) to provide practical support and assistance in implementing the policy and evaluation. In the Netherlands, the Dutch Timber Assessment System (TPAS) has been created. France and Germany rely directly on existing third-party certification schemes as being capable of verifying the legality and/or sustainability of timber.

23. Sustainability criteria for biofuels and bioliquids in the EU Directive on Renewable Energy (RES-D)

The European Commission approved, on 17th December 2008, the Directive on the promotion of the use of energy from renewable sources (2008/0016(COD)). In its article 17 environmental sustainability criteria for biofuels (liquid & gaseous fuels used in transport) and other bioliquids (used in heating and electricity) are defined. It is envisaged that the Commission will propose requirements for all biomass and energy uses by the end of 2009. The member countries of the EU are obliged to transpose the Directive to national legislation as well as prepare the National Renewable Energy Action Plans by end of June 2010. The regulations of this Directive are binding and mandatory for the EU member countries.

Within the frame of RES-D guidance proposal for biomass sustainability criteria will be given by the Commission in 2009. There are four principles which in the production and use of biofuels and bioliquids should be taken into account:

1. Greenhouse gas emissions savings.

Minimum requirement for GHG saving in relation to fossil fuels is at least 35%, and from 2017 50%. For new plants the saving must be 60% in 2017.

Rules and methodology for calculating GHG savings are defined in the Directive. The calculation is based on life cycle analysis including land use change. Indirect land use change is not defined. The operators can choose between default values for GHG savings set in the Directive or calculate the actual value of GHG saving. Default values of savings for advanced biofuels from wood are, for example, for waste wood ethanol 74%, farmed wood ethanol 70%, farmed wood Fischer-Tropsch diesel 93% or farmed wood methanol 91%. These values are valid if produced with no net carbon from land use change.

2. Biofuels and bioliquids shall not be made from raw material from land with recognized high biodiversity value.

This kind of land areas are defined as follows:

- a) forest undisturbed by significant human activity
- b) areas designed for nature protection purposes (unless evidence is provided that the production does not interfere with this purpose)
- c) highly biodiverse grassland (the Commission shall define criteria and geographical ranges)

3. Biofuels and bioliquids shall not be made from raw material from land with high carbon stock.

This determines that no conversion is allowed on:

- a) wetland
- b) continuous forested area (trees higher than 5 m, and canopy cover over 30%)
- c) low productive land (trees higher than 5 m, and canopy cover 10-30%), unless the carbon stock reservoir before and after conversion fulfills the conditions of 35% saving.
- d) undrained peatland areas

4. In the Directive there are no direct rules for other environmental aspects such as water and soil issues, but for agricultural conditions the EU's Common Agricultural Policy (CAP) will apply. The Commission shall report to the European Parliament and the Council on the national measures taken regarding the sustainability criteria, as well as in third countries. Also in these reports the dimension of social sustainability, and the impact on food security and land use and on other biomass-using sectors shall be addressed. These requirements should be taken into account in reporting rules of the operators, although they are not included in the sustainability criteria.

Verification:

The member states of the EU shall require the economic operators to show that the environmental sustainability criteria have been fulfilled. The main tool for demonstrating that operations have complied with the environmental aspects is the country reports for the Commission. However, the Directive does not clearly define the rules regarding how the reporting or verification of the adherence to the criteria shall be implemented by the member states. The Commission can accredit international agreements and voluntary schemes as sufficient proof regarding the performance of the criteria. Member states must accept this evidence before its application. Additionally the Commission may decide that agreements between the Community and third countries demonstrate that biofuels/bioliquids produced from raw materials cultivated in those countries comply with the environmental sustainability criteria.

24. CEN (the European Committee for Standardization) initiative for standards on sustainably produced biomass for energy applications

CEN aims to develop voluntary technical specifications for various products and services in order to help the single market in Europe. In summer 2008 CEN established a procedure to develop standards for "sustainably produced biomass for energy applications" with the working name CEN/TC 383 standards. The goal is to finalize the standard by the end of 2010.

There are been several national initiatives to develop criteria for sustainable biofuel production such as the requirements of the United Kingdom (RTFO), German (BSO), France (Fair Trade of biofuels), the Netherlands (Cramer) and the Nordic Swan labelling of Fuels. The Netherlands has been especially active, on a country level, to develop criteria for sustainable biofuel production, and proposed the so called Cramer criteria in 2006. This Dutch initiative has influenced the EU RES-D requirements as well as the CEN initiative.

The development work of the CEN standard is based on six working groups. These are:

1. Terminology and other cross-cutting issues

2. Greenhouse Gas (GHG) balance
3. Biodiversity and environmental aspects
4. Economic and social aspects
5. Conformity assessment (Chain of Custody and Auditing)
6. Indirect effects

It is aimed to work with these topics, excluding the conformity assessment, in the same manner as in the development work of the MCPFE indicators by defining principles, criteria and indicators. For the practical conformity assessment it is necessary to develop the thresholds for indicators as well as a verification system.

The production system description includes five steps: land use changes, cultivation/extraction of biomass/raw material, processing of biomass, transport and distribution of raw, semi-finished and finished materials and energy generation of solid biomass, biofuels, bioliquids or biogas into electricity or heating/cooling energy. Final use of these bioenergy materials is not included in the system, it means for example, that final use is not included in the calculation of GHG balances.

Negotiation has been undertaken between CEN and EC-DG TREN officials on the mandate of CEN to support the EU on the implementation of RES-D Directive. The Commission will not ask CEN to work on the definition of the substance of biofuel sustainability criteria. The reason is that the RED has been adopted under a legal statute that does not permit member states to go beyond the EC requirements. It means that the environmental, social issues and their indirect effects are beyond the RES-D Directive. On the other hand CEN has the right to take up this task on a voluntary basis. The Commission invites CEN to work with conformity assessment, GHG calculation methodology in Annex V of RES-D and with the evidence of high biodiversity and undrained peatland areas. The Commission aims to release a communication on these items in December 2009, and therefore hopes to have a proposal from CEN on these issues in September at the latest.

3. Analysis of the linkages between MCPFE tools and the criteria of Public Procurement/RES-D biofuels/bioliquids

31. General remarks

The approach taken in the development, in 1993-1995, of the basic set of MCPFE criteria and indicators was to create a tool for the assessment of the state of forests and to monitor the changes in the forests as the result of the implementation of the forest policy. The focus was on the wood production chain, in addition to other forest services, which forests can provide. During the next 10 years environmental concern, climate and energy policies have raised the need to develop environmental criteria for wood-based products (such as biofuels or wooden materials in construction). This development pushes for broadening the approach of the MCPFE criteria and indicators to include the environmental characteristics of the products in the indicator sets. Simultaneously the whole manufacturing chain for wooden products, from forest to the final product, should be considered.

These requirements call for customer oriented forest data collection and reporting, where the information should be proportional to the other forest indicators. There is a real need to communicate with other sectors regarding which forest indicators could be selected in order to give a balanced and focused view on the forests and its uses. While demand for various reporting is increasing, the aim should be that the forest indicators information can be reported and verified, and then used for many different purposes. The use of forest indicators in other sectors' reports is very important for synergies and awareness of forest issues. In the other sectors' reports only a few forest indicators and combined indicators are used.

The information gathered by the MCPFE and other regional process indicators regarding forest sustainability is important and unique providing a balanced compendium of information. The data compiled for the reports is uniquely important, while the sustainability report is the only one where the quantitative and qualitative indicators are put together in the same context. However, the report and indicators have a limited use. The main users of national forest reports are government officials and scientists who need the data for international sustainability reports, tools for forest policy and strategies, public information on forests, impact on forest research and other research initiatives.

Nowadays renewable energy demand has resulted in wood and its fiber having, in addition to pulp/paper and mechanical wood processing, a third use as an energy source for heat, electricity and biofuels. In these circumstances it has to be noted that in most cases one particular tree can provide raw material for all these forms of usage. The wood material will be gathered from the forest in one wood procurement process regardless of the end use. This means very effective and cost efficient procurement procedures, and urges more than before the application of a holistic approach and requirements for sustainable forest practices, instead of separating the requirements according to only one end use.

The wood procurement, as well wood and wooden products trade is global. This means that the regulations for forest management and wood/wood-based products are increasingly based on a global perspective. For example, the European Commission Directives, such as PPP policy, RES-D or FLEGT, are very much influenced by the issues (such as palm oil production as a biofuel) relevant in the developing countries, but not necessarily valid in Europe. In that way the EU is often creating questions and barriers for itself as these regulations are not relevant to most EU countries.

Forestry conditions in Europe differ from other continents in three important aspects. Common characteristics among the majority of European countries are especially the private, non-industrial forest ownership structure, long-term human impact on forests, and small quantity of original forest cover. In Europe the size of private forest holdings varies considerably. In some countries strong and well functioning co-operative organizations are created in order to guarantee sustainable forestry in spite of the scattered and small ownership structure.

The mosaic like heterogeneity of forests that influence many of the forest indicators, such as biodiversity, are applicable only on a regional and landscape level, and not practical on the scale of one forest holding. Various goals of sustainable forestry can be integrated into the practical operations by means of forest management planning on a regional level. Forest management plans, which are typical for the large scale company owned plantation forests in the tropics, are, due to this reason, not practical in small forest properties.

32. Linkages between EU PPP and RES-D requirements and the MCPFE tools

<u>PPP and RES-D requirements</u>	<u>MCPFE tools</u>
<u>PPP-requirements</u>	
1. “Legal”	MCPFE descriptive indicators of overall policies/ criteria, indirectly included in PEFC certification
2. “Sustainable”	The MCPFE tools cover the sustainability
<u>RES-D requirements</u>	
3. GHG savings	Not covered in MCPFE tools
4. Biodiversity (high biodiversity value land area)	Covered in MCPFE indicators and definitions, but the RES-D approach very limited
5. High carbon stock land	Covered, but not specified in forest context
<u>Biomass criteria in discussion, but not included in RES-D</u>	
6. Environmental, economic and social criteria	Broadly covered in MCPFE tools, should be specified according to RES criteria
7. Indirect effects of biomass production	Not covered
<u>Verification procedures</u>	
<u>8. PPP requirements</u>	
Forest certification, PEFC, FSC	Not applied, indirectly through PEFC,
Other equivalent means and tracing systems in place with third party assessment (ISO; EMAS) FLEGT license	Should be defined
<u>9. RES-D requirements</u>	
Not yet specified	Not applied, should be defined
Certification?	
CEN/TC 383?	
Other tools?	

Remarks:

1+2) PPP requirements

There are two basic requirements for Green Public Procurement in the EU expressed as “legal” and “sustainable”. The **legal** requirement is not specified in PPP, however, according to the national applications it could mean, in this context, issues such as compliance with national and local laws on forest management, environment and labor, legal harvest, and tenure rights, payment of all relevant royalties and taxes, compliance with CITES and control of illegal activities.

It has to be noted that MCPFE tools are not mentioned in PPP rules as possible verification tool for legality. However, the majority of these issues are widely covered in the MCPFE tools, but they are not developed in a form which makes verification practical. The relation of MCPFE tools to the legality principle comes also indirectly through PEFC certification, which uses, as a basis for standard setting, the MCPFE indicators and Pan-European Operational Level

Guidelines. Some new social elements should be added to the present set of criteria and indicators in order to ensure that participation, stakeholders and other procedural issues are taken into account.

The requirement **sustainability** is fully covered by MCPFE tools as it is now, but need to be extended to cover the new requirements on climate change/carbon and biomass, and environmental issues.

3) Greenhouse Gas Savings

In RES-D the basic threshold value for GHG savings is 35% through the production of biofuels/bioliquids in comparison to fossil fuels. Rules for calculating GHG effects are developed, and presented in annex V of RES-D. However, it is still necessary to clarify the calculation rules, taking into account biomass from various sources.

These GHG aspects are not included in the MCPFE tools, though Criterion 1 includes the maintenance of forest resources and their contribution to the global carbon cycles. One of the qualitative indicators requires maintenance of carbon balance in forests, which has been followed by carbon stock indicator. In addition another indicator in Criterion 6 follows the use of wood-based fuels.

The calculation rules of RES-D are outlined according to the production of biomass such as agricultural systems. Those rules are very limited to the forest conditions. The biomass is already available in the forests in large areas, only the short-rotation areas (willow) or fast growing plantations (such as poplar or eucalyptus) correspond with the rules. Forest biomass is, in terms of GHG emissions, a very efficient raw material in its procurement in comparison to the pure biomass production areas, while in most cases the wooden biomass is harvested in connection with solid wood harvesting as by-products such as branches and other logging residues. It should be noted that the GHG calculation rules split into two parts regarding forests: 1) emissions by the extraction of wooden biomass from forests with delivery ending at the energy generation plant, and 2) the GHG emissions by energy generation. It means that the procurement of wooden biomass is land use related, but the process to manufacture biofuels is product based.

Additionally the calculation should be separated according to the energy form: heat, electricity and liquid biofuels. Biofuels from wooden biomass are mainly processed and manufactured integrated with the production of pulp and paper. The integrated processing is very cost effective, therefore the rules have to be adjusted to take these components separately into consideration. At present nearly all the wooden biomass is used for heat and electricity production where the rules for GHG calculation are valid only for part of the procurement process.

In the case of the production of wooden biomass in plantations through land conversion, carbon emissions should be divided, “annualized”, at least for a period of 40 years instead of 20 years. The reasoning for that is the length of the replacement period. It is not realistic to replace the fossil fuels within 20 years with means of biofuels.

4+5) High biodiversity and high carbon land areas

The RES-D approach is restricting the biomass production on high biodiversity and carbon land areas. This definition reflects the extensions of biomass production areas through land use conversion. This is seldom the case in forested areas. This is valid, only when new short rotation or plantations of fast growing species are established or some calamities such as storms or fires occur.

In Europe the amount of undisturbed forests is 5%, with the most important areas being legally protected. The rest of the undisturbed forest lies in areas such as in mountains or far in the north making them inaccessible or uneconomical for harvesting. About 8 % of the forest area is protected for biodiversity or landscape purposes. Peatland areas are important in some European countries, but those suitable for wood production and also at the same time for biomass are already converted to forest land areas.

Much more important than keeping the high biodiversity value forests out of production is to maintain the biodiversity in normal multifunctional forests. For maintaining the biodiversity in European forests significant efforts have been done during the last 10-15 years. The MCPFE tools are sufficiently balanced to monitor the changes in biodiversity of the multifunctional forests as well as the protected forest areas. The main threat is the deadwood component, which might be reduced by wooden biomass extraction. This aspect needs more attention on a practical forest management level. Due to the climate change also the monitoring of alien species and plant pests shall require more attention than before.

The definitions, especially the concept “high biodiversity areas” need to be elaborated. Now the definitions (namely undisturbed forests) are partly based on the MCPFE definitions on the naturalness of forest and other wooded land, which is a relevant scientific and expert basis. Regarding the nature conservation areas, in the case of official Directive, the regulations should be based only on legally protected areas. Voluntary conservation areas, or aims to judge some forest areas to be high value for protection or carbon rich without any clear criteria or open democratic process, are not sufficient proof to justify their exclusion from biomass production.

6) Environmental and social criteria

The RES-D rules do not include environmental and social issues as mandatory for forest biomass production. In the CEN standard proposal, as well as in the national initiative, however, these aspects have been seriously considered.

Soil and water protection have been considered as environmental threats by the increased extraction of wooden biomass from the logging sites. Harvesting of nutrient rich parts of the trees and stumps for biomass may cause soil nutrient loss. The more intensive harvesting methods, such as whole-tree harvesting, may influence the water systems and run-off water from the site. MCPFE tools take into consideration the protective functions of forests (Criterion 5), but the indicators are not directly aimed at monitoring the water or soil protection issues in forest management. It is worth including water and soil nutrient aspects in the indicators and operational level guidelines within the MCPFE tools, although the scientific basis, with long-term balance of nutrients or water run-off, including the whole catchments areas, are still sparse.

Social issues have been raised in the discussion by the development of CEN standards. Social dimensions of sustainability are a very diverse group of items, which promote the material and social well-being of citizens. Several social issues are related to the procedural aspects of sustainability such as defining the sustainability criteria, verification and certification rules. In the 2008 Chatman House report on social issues in timber procurement policy the following relevant social issues were identified: rights of indigenous peoples, rights of local communities, community-based forest management, land tenure, protection of traditional knowledge, workers' fundamental rights, health and safety of workforce, fair trade / fair remuneration, participation, capacity-building, dispute resolution mechanisms and good governance.

MCPFE tools are broad, but very general in their coverage of social dimensions. The dimensions related to the participation and good governance have not been raised to the indicator level. The MCPFE approach to National Forest Programmes deals with procedural elements of policy, but these elements need to be integrated closer with indicators. In the assessments of forest certification systems by the national public procurement requirements (CPET, TPAS) significant emphasis has been put on the decision making bodies and appeal procedures, which implies the need to especially strengthen these social dimensions.

7) Indirect effects of biomass production

These indirect effects are a new area, for which there are no clear definitions. The concept is still open and under discussion. The clearest aspects are the indirect effects of land use change related issues, GHG emissions and social impacts. For example the expansion of the wooden biomass production area onto agricultural land may have indirect effects on the competition with food, animal feed and other fiber production. Land use changes also can have indirect impacts on the biodiversity, while the habitats are changing. These aspect needs to be considered in the development of MCPFE tools.

8+9). Verification issues for legal and sustainable

The rules of PPP refer to **“certificates of chain of custody certified as PEFC, FSC” or any other equivalent** (certification) proof being accepted as proof of compliance with **legal** requirements. In verification of legality the **tracing system being in place or FLEGT licence** for countries which have signed the VPA with the EU can also be sufficient proof.

In the principle of **sustainability** the acceptable proofs are **PEFC and FSC, any other sustainable forest management standards, and any other appropriate means, for example, a technical dossier.**

The “any other equivalent means” for proof of legality are not defined. However it can be concluded that equivalent means the same level as certification. These voluntary systems may be third party certified often as part of ISO or EMAS.

From the point of view of MCPFE tools it is important to consider the relation between certification and the PPP legality and sustainability verification, while the rules allow the using of any other means or sustainable forest standards as proof for both principles. This could provide the option of developing and using the MCPFE tools directly as proof (public, multi-criteria ecolabel) for legality and sustainability if verified by a third party (by EMAS, ISO or equivalent).

The relationship of MCPFE tools is created indirectly with PEFC certification, which uses, as a basis for the standard setting, the MCPFE indicators and Pan-European Operational Level Guidelines. However PEFC forest certification goes far beyond the MCPFE tools by setting the thresholds for certification standards and defining the third party assessment rules (certification, certification scheme governance, accreditation, chain of custody and labeling). These procedural rules are not the issue regarding criteria and standard setting of MCPFE, but these can be performed by third party verification.

The subjects of legality and sustainability are available in the information of MCPFE tools, but the formulation of the dimensions is mainly expressed as simple presentation of the various means. It should be examined whether it is possible to modify the MCPFE frame, especially the wording of the qualitative indicators of overall policies and criterion levels to correspond more directly to the legality requirements of GPP, such as legal harvest rights, payments of all relevant taxes and royalties etc.

It should be noted that certification is a market driven, voluntary tool applying the third party verification system. Forest certification has, so far, not been included in any EU Commission Directives as a mandatory tool. Forest certification has spread quite rapidly within Europe, but there are still numerous countries and areas where certification, due to the various reasons, is not applied. On that basis it is not fair to exclude those areas from the PPP policy; a substantial amount of non-certified wood is sustainably produced.

The strength of the MCPFE tools is the international agreed concept on sustainability, including the legal aspects as qualitative indicators, and the open democratic decision making process. This stakeholder commitment occurs by defining the national criteria indicators and by the National Forest Programme. This is an important principle in comparison to FSC, which uses, as a basis for the certification standards, their own 10 principles agreed by a three chamber system. The FSC principles are not open for discussion in the international forest and environmental processes.

Some countries applying their own public procurement policies have hesitated to accept the international PEFC as sustainable due to the heterogeneity between the national PEFC applications, but have accepted independently some national PEFC systems such as PEFC Finland and PEFC Germany.

4. Conclusions and recommendations

4.1. Proposals for amendments of MCPFE tools

There is need to develop MCPFE tools that are more operational and focused in order to better serve the new current topics and requirements. There are three key aspects to be considered: 1) MCPFE tools should focus, and also communicate to the public to give required information, on forests and forest sector for EU's climate and energy commitments, and services for societies, 2) descriptions of MCPFE quantitative indicators should be developed on an operational level for verification purposes by third party, and 3) relevant threshold values for criteria should be defined in the Pan-European Operational Level Guidelines for SFM.

For the discussions the following possible amendments in MCPFE criteria and indicators list will be presented:

Criterion 1 Forest Resources

Includes: “the maintenance of forest resources and their contribution to the global carbon cycles”. Qualitative indicator requires: “Maintenance of carbon balance in forests” which has been monitored by carbon stock quantitative indicator. In addition another indicator (under Criterion 6) monitors the use of wood-based fuels.

The expression “maintenance of carbon balance” is a very static approach, it might be useful to modify it during the process, as the carbon storage in wooden biomass and in the soil can fluctuate depending on harvesting cycles. The most important aspect is to maintain the ability of forests to act as carbon sink in the long run.

Modified wording: *the maintenance of the ability of forests (above ground biomass and soil) to act as carbon sink in the long run*

A new quantitative indicator could be added (under criterion 1 or criterion 6) regarding the GHG savings in heat and electricity generation and biofuel/bioliquid production from wooden biomass. In the same indicator also the mitigation aspects should be taken into account in the calculations.

The wording might be: *GHG savings in heat, electricity and biofuel/bioliquid production from wooden biomass*

One other quantitative indicator is needed to deal with the mitigation effect of the use of mechanical wood products.

The wording might be: *Carbon sequestration in harvested wood products*

The use of wood products in buildings and furniture indirectly reduces fossil fuel emissions as it replaces other materials such as concrete, whose manufacture consumes more energy and produces more emissions than the use of wood.

Harvested wood products¹ (HWP) has been proposed as a concept for calculating the carbon-sequestration capacity of wood products. Rules for calculation are being developed, with the aim of using them for calculating forest carbon balance. Also the current databases, both national and international, make it possible to calculate the carbon-sequestration capacity of wood products

Criterion 2 Health and vitality of forests

¹ Harvested wood products (HWP) comprises of all wood material (including bark) which leaves harvest sites. Slash and other material left at harvest sites are regarded as dead organic matter and not HWP (IPCC 2006 guidelines).

Climate change and international trade in plant materials increase the spread of alien species and plant pests. National strategies and programmes are needed to combat invasive alien species.

These aspects should be emphasized in the quantitative indicator of B3 and B6 (under Criterion 4), and monitored with available quantitative indicators.

Criterion 3 Productive functions of forests

From the increased use of forest biomass follows the need to take more care of the environmental issues on the harvesting sites.

A new qualitative indicator for the policies, institutions and instruments and their implementation should be developed for forest biomass.

Proposal for wording: *Safeguarding environmental conditions on the site by wooden biomass extraction*

For monitoring two new quantitative indicators could be created:

Nutrient fluxes and balance in regeneration areas (should be developed by experts)

Level and quality of groundwater as results of forest operations (should be developed by experts)

(Deadwood component is already followed by biodiversity indicator)

The threshold values can be set by operational level guidelines depending on country situations (it is very difficult to determine general thresholds while the forest conditions vary significantly depending on the growing conditions).

Examples of threshold values:

Whole-tree extraction is forbidden from nutrient poor sites.

For stump extraction on fertile spruce forest sites at least 30% of stumps should not be harvested.

In boreal rich soil forest at least 5 m³/ha dead wood shall be left in the regeneration site.

In the qualitative indicator B4 “Safeguarding the wood production”, as new aspect the forest management contingency plans should be required. Reasoning for the amendment is the possible harmful effects of climate change.

The most serious immediate threats from climate change to the development of forests come from extreme weather phenomena. In the event of extreme weather, such as drought, forest fires, storms or snow damage, trees may die across wide areas, reforestation may be prevented and dead tree matter may cause mass propagation of forest pests, also in surrounding healthy forests.

The contingency plan could include funding options for covering any damage, additionally operational models must be drawn up so that the industry is prepared for the detrimental effects of sudden and extreme weather caused by climate change and the damage it causes to forests. Areas that are particularly at risk from such extreme weather conditions must be mapped out.

Operational models also need to be drawn up for dealing with sudden increases in timber felling and for ensuring the smooth functioning of timber markets.

Criterion 4 Biological diversity in the forests

The present indicators generally cover the various main elements of biodiversity also under changing climate and new requirements of wooden biomass extraction. It is, however, reasonable to discuss whether the deadwood and alien species issues are sufficiently considered.

There is an important difference between commercial forests and natural forests in terms of carbon sequestration: from the perspective of climate protection, natural forests in their "end state" are pure carbon sinks, in which carbon sequestration, through the growth of biomass, and carbon release, through the decay of biomass, are in equilibrium, whereas commercial forests are constantly developing new and additional carbon sequestration capacity due to the harvesting of timber.

Integrated protection (decayed wood and small biotopes) in the context of commercial forest management is more effective than comprehensive forest protection in combating climate change. Thus, shifting forests away from being actively managed to being fully-protected reduces the surface area suitable for stands of growing trees which can increase the amount of carbon stored in forests and, in particular, provide a source of wood products which compensate for other forms of energy and other materials.

Criterion 5 Protective functions of forests

No essential amendments necessary

Criterion 6 Socio-economic functions of forests

It is worth discussing whether the quantitative indicators B9, B10 and B11 should be extended to cover more clearly, than currently, the aspect of good governance, dispute resolution mechanisms, participation, social well-being, workers' fundamental rights, health and safety of workforce, fair trade / fair remuneration, capacity-building and communication. These aspects should be made more visible and outlined to be suitable for verifications by operational level guidelines.

The National Forest Programmes are important tools for the legal, participation and governance issues as a MCPFE tool. It might be useful to discuss, whether the NFPs as such or partly could be included as new indicators under the Criterion 6.

Although forests contribute to well-being in many ways, these additional functions are seldom reflected in profitability calculations or in timber prices. In addition to their significance for climate change, forests perform many other important ecological, social and economic functions, which need to be safeguarded. Apart from the production of wood, forestry goals include maintaining forest biodiversity, management of groundwater resources, landscape management, use of forests for recreational purposes and tourism, serving as a traffic noise barrier, prevention of avalanches and erosion and providing non-wood goods such as berries, mushrooms and game.

Methods which assign an economic value to these functions should be developed so that forest owners have an incentive to maintain them. It could be discussed whether a new indicator in Criterion 6 could be developed to elaborate these immaterial benefits of forests

42. Proposals for tendering of PPP

Some basic remarks:

There is need for a clear European (EU) approach to Public Procurement Policy in order to avoid different, and possibly contradictory, national approaches. The present situation, with the various assessment systems that are often very complicated, with unilateral rules, creates an unnecessary effort, bureaucracy and uncertainties regarding the wood-product markets.

The assessment rules of the PPP should recognize and emphasize the renewability and the carbon sequestration capacity (mitigation effect and carbon storages by wooden product such as wooden construction, wooden furniture), compared to other raw materials. The use of wood in construction is still limited by the lack of uniform standards, rules and certification criteria. The construction sector should have at its disposal analyses of the life-cycle and greenhouse gas emissions of products, based on scientific calculations, so that it could compare various materials on an impartial basis.

It is evident that the various wood-based products (wood (fiber) for paper, mechanical wood, and wooden biomass for energy purposes) need slight modifications regarding the criteria for tendering. Especially the wooden biomass production for energy (there are different options such as heat, electricity and biofuels) in PPP requirements needs clarification in order compare with mechanical wood (construction and furniture) and paper.

Including the carbon sequestration capacity of wood products in the carbon balance calculations could provide the forestry industry with an additional incentive to manage forests in an environmentally-friendly and efficient way. Continuous management of the forests is of major significance for preserving the viability of forests in the face of the harmful effects of climate change.

Elements for discussion by PPP tendering process:

By tendering the principle “**legal**” could be outlined in a simple way as:

Relevant international and national laws and regulations shall be respected

These laws and regulations required from the point of view of the EU should be defined and listed. Countries could be obliged to list all their relevant laws related to sustainable forest management, as they already have been included, for example, in the MCPFE tools.

The operational aspects related to legality such as payments of all relevant taxes, and similar obligations could be taken into consideration regarding verification.

The principle of “**sustainable**”

Green PP emphasizes the environmental characteristics of materials. In the case of wood raw material then the carbon sequestration capacity, recyclability, renewability and the substitution effects of wood are important to include in the PPP tendering process, in addition to the basic set of sustainable forest management (SFM) elements. In order to assure that the forest management is “in good hands” in societies, it might be also useful to emphasize the aspects of good governance such as participation and dispute resolution mechanisms.

Proposal for wording:

The wood raw material shall come from sustainably managed forests and through the use of wood and wood-based products the environmental characteristics of wood shall be made visible

The basic requirements/criteria for tenders could be the same as agreed internationally to be included in the concept of sustainable forest management:

The criteria are:

- Forest resources
- Health and vitality of forests
- Productive functions of forests
- Biological diversity in the forests
- Protective functions of forests
- Socio-economic functions of forests

The new proposed development of indicators regarding the forest biomass production (water, nutrients, biodiversity) should be taken into account and included in these criteria.

It could be discussed whether new criteria is necessary for the good governance issues, or whether it could be included in the amendments of present qualitative indicators of SFM, or include these aspects in the National Forest Programme’s tool.

In addition product-based criteria for wooden material, called “environmental benefits of wood”, should be developed. Their development could include the issues of carbon sequestration capacity, recyclability, renewability and substitution effects. The integration of these issues requires life-cycle calculation, where the methodology should be agreed.

Proposals for **verification (in addition to the remarks 8+9)**

MCPFE tools could be developed as sufficient proof for legality and sustainability principles for PPP. The EU should give clear messages, which kind of policy is required in EU PPP rules in order to guarantee transparent, open, operational and non-discriminating legally based systems for proof verification.

In each case an open, harmonized evaluation of various forest certification systems is required in order to avoid any kind discrimination. It should be clarified whether the forest certification systems, if they are not based on an internationally agreed concept of sustainability, are compatible with EU regulatory context and the Directive of Public Procurement.

43. Proposals for RES-D

Present criteria for sustainable produced biomass of RES-D have limited use for the forest biomass context. The criteria are suitable for wooden biomass production in short-rotation and fast-growing tree plantations with parallel production systems as in the agricultural production.

MCPFE tools can provide, with some modifications in environmental and carbon sequestration aspects, a useful tool for standards of sustainable production of biomass for energy purposes, and their verification by a third party.

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