FOREST EUROPE Advisory Group

on the updating of the pan-European Indicators for Sustainable Forest Management

Second Report of the UPI Advisory Group

(16 April 2015)

1. Introduction

The FOREST EUROPE Advisory Group on the updating of the pan-European Indicators for Sustainable Forest Management (hereinafter AG UPI) was established, and its Terms of Reference adopted, by the Expert Level Meeting (ELM) held in Santiago de Compostela, Spain, on 20-22 January 2015.

The Advisory Group is comprised by experts from 13 countries, 7 international organizations and one independent expert (a list of the AG UPI members can be found in Annex 2), supported by the Liaison Unit Madrid (LUM) and the assistance (Marco Ferreti from TerraData). This Advisory Group is open to include, where appropriate, other members who may be relevant for the job.

The AG UPI had its first meeting in Madrid on 11 February 2015, when Mr. Jari Parviainen was elected as leader of the Advisory Group.

At that meeting the AG UPI decided on the organization of its work and gave on its first report[1] general recommendations to the updating of the set of indicators that served as a basis for further discussions during the second online consultation of the UPI participatory process.

The AG UPI had its second meeting in Madrid on 9-10 April 2015. During this meeting, concrete proposals on the updating of the pan-European set of indicators for SFM were tackled and the components of the second report of the AG were considered.

This second report of the AG UPI, hereby presented, comprises specific approaches to the proposals, and will be brought to a workshop with national experts, stakeholders and international organizations to be held on 27-29 April 2015 in Madrid.

With the outcomes of the Workshop, the AG UPI will give its final recommendations on proposals for updating the list of pan-European indicators on SFM to an ELM that will take place in July 2015.

2. Advisory Group concrete recommendations

According to the Terms of Reference of the AG UPI, a second report of the Advisory Group will be considered by countries, stakeholders and organizations on a Workshop held with that aim.

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[1] The first report of the AG UPI can be found at:
http://www.foresteurope.org/sites/default/files/1AG_UPI_FirstReport.pdf

The AG UPI decided to build its second report around concrete recommendations on proposals for the updating of the pan-European indicators.

Regarding the participatory process, a second online consultation (hereinafter 2OC) was opened to collect the views from countries and stakeholders on the general recommendations on modifications to the indicators as presented by the AG UPI on its first report.

15 inputs were received during the 2OC: 14 from signatories and 1 from observer organizations. A first overview of the inputs received can be found in Annex 3.

Building on the inputs received from countries and stakeholders during the 2OC, the main references to the work (mainly the objectives, the guiding principles and main considerations), inputs from experts and their own expertise, the AG UPI analyzed the indicators and gave some concrete recommendations on modifications, additions or deletions, pointing out the concrete modifications on the title and full text of the indicators, and main proposals for the updating of the related information of the indicators (background information and terms and definitions).

The concrete proposals made by the Advisory Group for the second report can be found in the summary table of recommendation proposals from the AG UPI included in Annex 1.

The AG UPI also considered the Updated Background Information and the Consolidated Terms and Definitions related to each indicator, built upon the documents from Vienna 2003. These informative and supportive documents "Updated Background Information" (<2AG_UPI_UpdatedBackgroundInformation.docx>) and "Consolidated terms and definitions" (<2AG_UPI_ConsolidatedTerms&Definitions.docx>) will also be considered at the UPI Workshop.

3. Other considerations

Along the discussions, the AG UPI made some additional reflections and considerations, mainly improvements to the related reporting objective of the indicators, to take into account when e.g. developing reporting questionnaires. You can find them at Annex 4.

Annex 1. - PROCESS TO UPDATE THE PAN-EUROPEAN SET OF INDICATORS FOR SUSTAINABLE FOREST MANAGEMENT

AG UPI DRAFT TABLE 2: QUALITATIVE AND QUANTITATIVE INDICATORS

Version 10 April 2015

This table comprises the concrete updating recommendations of the AG UPI to the pan-European set of indicators for SFM, build upon the first report of the group, the inputs from the 2OC and with considerations from experts.

Color coding: Additions in blue; Modifications in green to the name or full text of the indicator (If something is proposed to be deleted is strike through); and Deletions in red

1. Recommendations on modifications and updating of the pan-European indicators for SFM – Structured according to the proposed linkage between Qualitative and Quantitative Indicators

Indicator name	AG suggestion	Comments
A./ [suggestion to change name to: ”Criterion 7”]	**Forest governance: policies, institutions and instruments for sustainable forest management / Governance of the forest sector**	
A.1 National forest programmes or similar **A.1. Forest governance/policy framework:** **a Process (National Forest Programme or similar)** **b. Forest policy (strategy, action plan or programme)**	**Modify**	Make it broader addressing the basic dimensions of the governance/policy framework, including the NFP process and the forest policy (strategy, action plan or programme). Background information for the indicator is being developed including also information related to other policies (bio-economy, climate change, etc.)
A.2 Institutional frameworks	**Keep**	Background information for the indicator is being developed including information related to current qualitative indicator B.11 Research, training, education and capacity building

Indicator name	AG suggestion	Comments
A.3.Legal/regulatory framework ~~and international commitments~~: **a National (or sub-national)** **b International commitments**	**Modify**	Modify separating the international commitments Background information for the indicator is being developed including means of enforcement of the legal/regulatory framework, including also trade dimensions of measures against illegal logging (*the considerations on policies and measures against illegal logging in the country are under N.B.3*)
A.4 Financial ~~instruments~~ and economic ~~policy~~ instruments	**Modify slightly**	Include also information on possible PES schemes. If needed take into account any final changes in 6.4 Investments in forests.
A.5 Information and communication means	**Modified slightly**	Background information for the indicator is being developed including information related to current qualitative indicator B.10. Public awareness and participation.

Indicator No & name	Full text *(including suggested corrections if any)*	AG suggestion	Comments
CRITERION 1	**Maintenance and Appropriate Enhancement of Forest Resources and their Contribution to Global Carbon Cycles**		
N-B.1. Policies, institutions and instruments to maintain and appropriate enhance forest resources and their contribution to global carbon cycles.		**Modify**	Have only one qualitative sub-indicator[2] on the policy dialog under Criterion 1. *(Including former B.1 and B.2)* It should cover as adequate/as appropriate the indicators under Criterion 1 and the dimensions under A part. Background information for the indicator is being developed including related specific policies on land use changes and management, climate change (mitigation and adaptation), energy (renewable energy, energy efficiency) Though recognizing its horizontal nature, it is recommended to include, at least here, information, both qualitative and quantitative, related to: - Forests under management plan or similar: Proportion of forest and other wooded land under a management plan or equivalent instrument (current indicator 3.5), giving its horizontal nature. - Forest certification schemes
1.1 Forest area	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	**Keep**	Only modifications in the background information of the indicator: - Forest types: only consider coniferous, broadleaves and mixed stands. - Streamline Forest Available for Wood Supply (FAWS) definition
1.2 Growing stock	Growing stock on forest and other wooded land, classified by forest type and by availability of wood supply.	**Keep**	Only modifications in the background information of the indicator: - Forest types: only consider coniferous, broadleaves and mixed stands. - Streamline FAWS definition

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[2] B qualitative indicators are recommended to be reformulated to address the policy dialog related to each criterion – as only one indicator per criterion at the beginning or at the end of the list of quantitative indicators.

Indicator No & name	Full text *(including suggested corrections if any)*	AG suggestion	Comments
1.3 Age structure and/or diameter distribution	Age structure and/or diameter distribution of forest and other wooded land, classified ~~by forest type~~ by availability for wood supply	**Modify**	Streamline the title. Still leave open to age structure or diameter distribution in order to align with the different peculiarities of the countries. Modifications in the background information of the indicator: - Further discussions on the need to address forest types or not. - Streamline FAWS definition
1.4 Forest-related carbon stocks	~~Carbon stock of woody biomass and of soils on forest and other wooded land~~ Forest ecosystem C pools and C stock changes. C stocks and C stocks changes of carbon stored in harvested wood products.	**Modify**	Streamline the name and the full text of the indicator, including carbon stock in woody biomass and in soil, in wood products and carbon flows. Modify including information related to UNFCCC to highlight the contribution of forests to climate change adaptation and mitigation. *On-going work* on the development of the background information to align with the national reporting to the climate change convention.

Indicator No & name	Full text *(including suggested corrections if any)*	AG suggestion	Comments
CRITERION 2	**Maintenance of Forest Ecosystem Health and Vitality**		
N-B.2. Policies, institutions and instruments to maintain forest ecosystem health and vitality		**Modify**	Have only one qualitative sub-indicator on the policy dialog under Criterion 2. *(Including former B.3)* It should cover as adequate/as appropriate the indicators under Criterion 2 and the dimensions under A part. Background information for the indicator is being developed including specific policies related to forest health and vitality (pollution, forest fires, storms, floods, etc.), including considerations on risk management or contingency plans and strategies, and policies, actions and measures taken against desertification/land degradation.
2.1 Deposition and concentration of air pollutants (IDP[3])	Deposition and concentration of air pollutants on forest and other wooded land ~~classified by N, S and base cations~~	**Modify slightly**	Leave the title open to any available information means. Modifications in the background information of the indicator: - Include parameters on concentrations of ozone
2.2 Soil condition (IDP)	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	**Keep**	Only modifications in the background information to make it more relevant and useful in the context of SFM – highlighting the relation between soils, climate change, depositions. *On 22-23 April 2015 there will be a meeting of the ICP Forest Soil expert Panel (FSEP) that will discuss the strategy for a new EU-wide forest soil survey in 2020*

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[3] IDP – International Data Providers

Indicator No & name	Full text *(including suggested corrections if any)*	AG suggestion	Comments
2.3 Defoliation (IDP)	Defoliation of one or more main tree species on forest and other wooded land in each of the defoliation classes "moderate", "severe" and "dead"	**Keep / delete**	The Advisory Group has different positions as to keep or delete the indicator considering the scientific and political side of it: Considerations to keep the indicator: - There is still data availability for most of the European countries. - According to scientists there is a link between the causes and effects concerning meteorology and defoliation. - It is the only indicator related to health in the set, at least till possible new ones are developed. Considerations to delete the indicator: - There are better indicators for the forests' health or there will be (as a possible Vegetation index) - Notwithstanding the foregoing some consider there are no direct causes-effects. - Expensive
2.4 Forest damage	Forest and other wooded land with damage, classified by primary damaging agent (abiotic, biotic and human induced) ~~and by forest type~~	**Keep**	Only modifications in the background information. An indicator on Forest degradation is under consideration. (*see next indicator*).
N.2.4 bis Forest degradation	Area of degraded forest land	**On-going discussion/work**	On-going work on the possibility to add a new indicator on forest degradation avoiding overlapping with 2.4 forest damage.

Indicator No & name	Full text *(including suggested corrections if any)*	AG suggestion	Comments
N-2.6 Land productivity on forest land (Indicator related to desertification)	Trends in land productivity or functioning of the forest land	**Evaluation to add in the future**	It is considered as an important issue in order to streamline with the UNCCD. It is recommended to evaluate it in order to possible add it in the future. The UNCCD is still developing possible indicators on 'land degradation' which are not yet formally adopted. The AG recommend to wait till UNCCD agrees on such indicator, and the mapping on trends in land productivity on forest land is fully developed. The AG *recommend on having a pilot project* in the next reporting period to check the availability of data, the feasibility and reliability and the meaningfulness of the information.

Indicator No & name	Full text *(including suggested corrections if any)*	AG suggestion	Comments
CRITERION 3	**Maintenance and Encouragement of Productive Functions of Forests (Wood and Non-Wood)**		
N-B.3. Policies, institutions and instruments to maintain and encourage the productive functions of forests		**Modify**	Have only one qualitative sub-indicator on the policy dialog under Criterion 3. *(Including former B.4 and B.5)* It should cover as adequate/as appropriate the indicators under Criterion 3 and the dimensions under A part. Background information for the indicator is being developed including specific policies related to production of wood products, non-wood products, and the use of forest ecosystem services and on green procurements where appropriate. Include also considerations on policies and measures against illegal logging and harvesting (in the country) – *(the trade dimension is under A.3)* Include also actions and measures taken to value forest ecosystem services, including quantitative information if feasible (though recognizing that this matter could be considered as a horizontal issue, it is recommended to have it here). Include also policy considerations on recreation as a forest service.
3.1 Increment and fellings	Balance between net annual increment and annual fellings of wood on forest available for wood supply	**Keep**	Only modifications in the background information of the indicator: - Streamline definitions - Include also a parameter on net annual increments and felling on total forest area

Indicator No & name	Full text *(including suggested corrections if any)*	AG suggestion	Comments
3.2 Roundwood	~~Value and quantity of marketed~~ Quantity and market value of roundwood	**Modify**	Modify including both the value of marketed and non-marketed wood. Modifications in the background information related to: - Consider not only roundwood but all the wood - Include a parameter on 'Estimated market value of non-marketed wood' (voluntary)
3.3 Non-wood goods	~~Value and quantity of marketed~~ Quantity and market value of non-wood goods from forest and other wooded land	**Modify**	Modify including both the value of marketed and non-marketed of non-wood goods. Modifications in the background information of the indicator: - Align the definitions and categories of non-wood goods at European level - Include a parameter on 'Estimated market value of non-marketed non-wood goods' (voluntary)
3.4 Services	~~Value of marketed services~~ Market value of services on forest and other wooded land	**Modify**	Consider not only the value of the services that have been marketed. (Modify the indicator in the way as it has been done for the indicators 3.2 and 3.3 – seeking consistency). Modifications in the background information related to: - Include a parameter on 'Estimated market value of non-marketed services' (voluntary)
3.5 Forests under management plan	Proportion of forest and other wooded land under a management plan or equivalent	**Move to Qualitative N.B.1**	Remove its position under Criterion 3, putting it under policy dialog of Criterion 1 – New N.B.1, keeping its quantitative information. (*see N.B.1*)

Indicator No & name	Full text *(including suggested corrections if any)*	AG suggestion	Comments
CRITERION 4	**Maintenance, Conservation and Appropriate Enhancement of Biological Diversity in Forest Ecosystems**		
N-B.4. Policies, institutions and instruments to maintain, conserve and appropriate enhance the biological diversity in forest ecosystem		**Modify**	Have only one qualitative sub-indicator on the policy dialog under Criterion 4. *(Including former B.6)* It should cover as adequate/as appropriate the indicators under Criterion 4 and the dimensions under A part. Background information for the indicator is being developed including specific policies related to biological diversity in forest ecosystems, including forest fragmentation/landscape pattern.
4.1 Diversity of tree species ~~composition~~	Area of forest and other wooded land, classified by number of tree species occurring and ~~by forest type~~	**Modify only title** (not concept)	Change the title in order to streamline its interpretation. Modification of the background information clarifying the reporting categories.
4.2 Regeneration	~~Area of regeneration within even-aged stands and uneven-aged stands, classified by regeneration type~~ Total forest area by stand origin and area of annual forest regeneration and expansion by type.	**Modify full text** (not concept)	Only modify full text, clearing the definition, making it more understandable and clarifying the scope to include referring to annual regeneration.
4.3 Naturalness	Area of forest and other wooded land, classified by types of naturalness ~~"undisturbed by man", by "semi-natural" or by "plantations", each by forest type~~	**Modify**	Modify the full text to do it more straightforward. Work in the future on clarifying definitions of MCPFE categories and/or developing sub-categories under semi-natural class.
4.4 Introduced tree species	Area of forest and other wooded land dominated by introduced tree species	**Keep**	
4.5 Deadwood	Volume of standing deadwood and of lying deadwood on forest and other wooded land ~~classified by forest type~~	**Modify slightly**	Modify the full text to do it more straightforward.

Indicator No & name	Full text *(including suggested corrections if any)*	AG suggestion	Comments
4.6 Genetic resources (IDP)	Area managed for conservation and utilization of forest tree genetic resources (*in situ* and *ex situ* gene conservation) and area managed for seed production	**Keep**	Only modifications in the background information streamlining according to Bioversity – EUFORGEN.
4.7 Landscape pattern (IDP)	Landscape-level spatial pattern of forest cover	**Delete**	The AG recommends deleting it and checking again its meaningfulness in the future when satellite data and better methodologies could be developed.
4.8 Threatened forest species	Number of threatened forest species, classified according to IUCN Red List categories in relation to total number of forest species	**Keep**	Only modifications in the background information: - parameters/reporting focused on forest species related to birds, mammals and trees - Inform also in changes between red lists IUCN categories over time
4.9 Protected forests	Area of forest and other wooded land protected to conserve biodiversity, landscapes and specific natural elements, according to MCPFE categories ~~Assessment Guidelines~~	**Modify slightly**	Modify the full text to do it more straightforward. The 'Information Document on Data Collection and Compiling the Statistics on Protected and Protective Forest and Other Wooded Land in Europe' has been updated.
N 4.10 Common forest bird species	Occurrence of common breeding bird species related to forest ecosystems	**Evaluation to add in the future**	The AG highlights the importance to have an indicator on fauna pointing out that this is the most feasible one, and to align with the CBD (WBI (Wild Bird Index) indices adopted by the CBD as an indicator for immediate testing, under the 2010 Aichi Target). PECBMS (Pan-European Common Bird Monitoring Scheme) has data, coming from volunteers, from 27 countries within different time frame. The AG recommends having a pilot project in the next reporting period to check the availability of data, the feasibility and reliability and the meaningfulness of the information.

Indicator No & name	Full text *(including suggested corrections if any)*	AG suggestion	Comments
CRITERION 5	**Maintenance and Appropriate Enhancement of Protective Functions in Forest Management (notably soil and water)**		
N-B.5. Policies, institutions and instruments to maintain and appropriate enhance of the protective functions in forest management		**Modify**	Have only one qualitative sub-indicator on the policy dialog under Criterion 5. (*Including former B.7*). It should cover as adequate/as appropriate the indicators under Criterion 5 and the dimensions under A part. Background information for the indicator is being developed including specific policies related to protective functions of forests. Include actions to combat desertification/land degradation, protection against floods, water management, etc. And include also policies, measures and actions taken on reforestation and afforestation for protective functions (both qualitative and quantitative dimensions).
5.1 Protective forests – soil, water and other ecosystem functions - infrastructure and managed natural resources	~~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"~~ Area of forest and other wooded land designated to prevent soil erosion, preserve water resources, maintain other protective functions, protect infrastructure and managed natural resources against natural hazards.	**Modify**	Merge 5.1. and 5.2 Modification of the background information: - Highlighting the legally based attributes and eventually (if existed) purpose of management of these areas. The 'Information Document on Data Collection and Compiling the Statistics on Protected and Protective Forest and Other Wooded Land in Europe' has been updated.
~~5.2 Protective forests – infrastructure and managed natural resources~~	~~Area of forest and other wooded land designated to protect infrastructure and managed natural resources against natural hazards, part of MCPFE Class "Protective Functions"~~	**Modify**	Merge with 5.1.

Indicator No & name	Full text *(including suggested corrections if any)*	AG suggestion	Comments
CRITERION 6	**Maintenance of other socioeconomic functions and conditions**		
N-B.6. Policies, institutions and instruments to maintain other socioeconomic functions and conditions		**Modify**	Have only one qualitative sub-indicator on the policy dialog under Criterion 6. (*Including former B.8, B.9 and B.12.*) It should cover as adequate/as appropriate the indicators under Criterion 6 and the dimensions under A part. Background information for the indicator is being developed including specific policies related to forest socio-economics, including production, consumption and trade of wood and of wood for energy, rural development, forest employment its safety and health, and cultural and spiritual values of forests. Include information on B.11 Cultural and spiritual values, keeping quantitative and qualitative approaches.
6.1 Forest holdings	Number of forest holdings, classified by ownership categories and size classes	**Keep**	
6.2 Contribution of forest sector to GDP	Contribution of forestry and manufacturing of wood and paper products to gross domestic product	**Keep**	
6.3 Net revenue	Net revenue of forest enterprises	**Keep**	

Indicator No & name	Full text *(including suggested corrections if any)*	AG suggestion	Comments
6.4 ~~Expenditures in forests for services~~ Investments in forests and forestry	~~Total expenditures for long-term sustainable services from forests~~ Total public and private investments in forests and forestry	**Modify**	Modify the name (and the scope of the indicator) to make it more meaningful. The AG reflects on the importance to tackle the private side of the investments but highlights the possible difficulty to collect related data. Countries are asked to check on the data available on private investments on forests in their countries. Background information updated to take into account the private dimension. *A.4 will be modified to take into account these changes if needed.*
6.5 Forest sector workforce	Number of persons employed and labour input in the forest sector, classified by gender and age group, education and job characteristics including occupational safety and health	**Modify**	Merge with 6.6. But do not add occupational safety and health related to wood processing industry. Modifications on the background information: - Clarify the scope on reporting parameters
~~6.6 Occupational safety and health~~	~~Frequency of occupational accidents and occupational diseases in forestry~~	**Modify**	Merge with 6.5.
6.7 Wood consumption (IDP)	Consumption per head of wood and products derived from wood including woody biomass for energy	**Modify**	Modify in order to take into account more products (suggestion to include the use for energy). Modifications on the background information accordingly.
6.8 Trade in wood (IDP)	Imports and exports of wood and products derived from wood	**Keep**	
6.9 Energy from wood ~~resources~~	Share of wood energy in total energy consumption, classified by origin of wood	**Keep**	

Indicator No & name	Full text *(including suggested corrections if any)*	AG suggestion	Comments
6.10 ~~Accessibility for~~ **Recreation in forests**	~~Area of forest and other wooded land where public has a right of access for recreational purposes and indication of intensity of use~~ The use of forests and other wooded land for recreation in terms of right of access, provision of facilities and intensity of use	**Modify slightly** (not concept)	Modify only the title and full text to do it more straightforward. The AG recommends setting up a Working Group to work further in this indicator for the future.
6.11 Cultural and spiritual values	~~Number of~~ sites within forest and other wooded land designated as having cultural or spiritual values	**Modify –** move to qualitative N.B.6	Move to qualitative part keeping the possible quantitative side of it (time series based)

Color coding: Additions in blue, Modifications in green, and Deletions in red

2. AG UPI considerations on the proposed new indicators

Indicator No & name	AG suggestion	Comments
N.2.5 Potential impact of CC on forests	**Not to add**	
N.2.6 Indicator on desertification / Land degradation	**Evaluation to add in the future**	*See above N.2.6*
N.2.7 Characteristics of contaminated lands	**On-going discussion/work**	Consideration on to have it tackled under possible new indicator on forest degradation (see above N.2.4 bis)
N.3.6 Forest certification	**Add under N.B.1**	
N.3.7 Hunting management	**Not to add**	
N.4.4.bis Impact of invasive species	**Not to add**	Quality related policies and measures taken to be considered under NB.4
N.4.6.bis GMO trees	**Not to add**	
N.4.10 Common forest bird species	**Evaluation to add in the future**	*See above N.4.10*
N.5.3 Area of forest on degradated land	**On-going discussion/work**	Consideration on to have it tackled under possible new indicator on forest degradation (see above N.2.4 bis)
N.6.12 Communication and public relations	**Not to add**	It is already tackled under A.5

Annex 2. - List of the Advisory Group members

Experts	Country/Organization
Jaroslav Kubista	Czech Republic
Steve Smith / María Gafo	European Commission
Jari Parviainen	Finland
Jonathan Saulnier	France
Merab Sharabidze	Georgia
Joerg Schweinle	Germany
Janis Donis	Latvia
Stein Tomter	Norway
Magdalena Wolicka / Łukasz Paradowski	Poland
Matej Schwarz	Slovak Republic
Jonas Fridman	Sweden
Roberto Bolge	Switzerland
Richard Howe / Sheila Ward	United Kingdom
Aljoscha Requardt	CEPF
Enrique Valero	COPA-COGECA
Bernhard Wolfslehener / Stephanie Linser	EFI
Ewald Rametsteiner	FAO
Michael Berger / Ana Belen Noriega	PEFC
Roman Michalak	UNECE
Tomasz Juszczak	UNFF
Christopher Prins	Independent expert

<ins>Annex 3.</ins> - Second On-line Consultation (2OC) – A brief overview

Marco Ferretti, Sara Landi, Martina Pollastrini (*TerraData environmetrics*)

Introduction

Replies to the 2OC were obtained form from 15 countries (Austria, Belgium, Bulgaria, Finland, France, Germany, Hungary, Luxembourg, Norway, Poland, Portugal, Switzerland, Turkey, Ukraine, United Kingdom), plus the European Union (from the DG Environment of the European Commission) and the European Forest Institute.

To summarize the replies, the frequency of each answer was quantified (see Table in Appendix I) and presented in graphs. Hereafter, a brief summary of the outcomes is presented for each Criterion and Indicator. It is worth mentioning that, in general, no input (NI) should be taken as agreement with the suggestion made by the Advisory Group. However, since in some cases (e.g. defoliation) there is an ongoing discussion with no clear suggestion, NI is always computed separately.
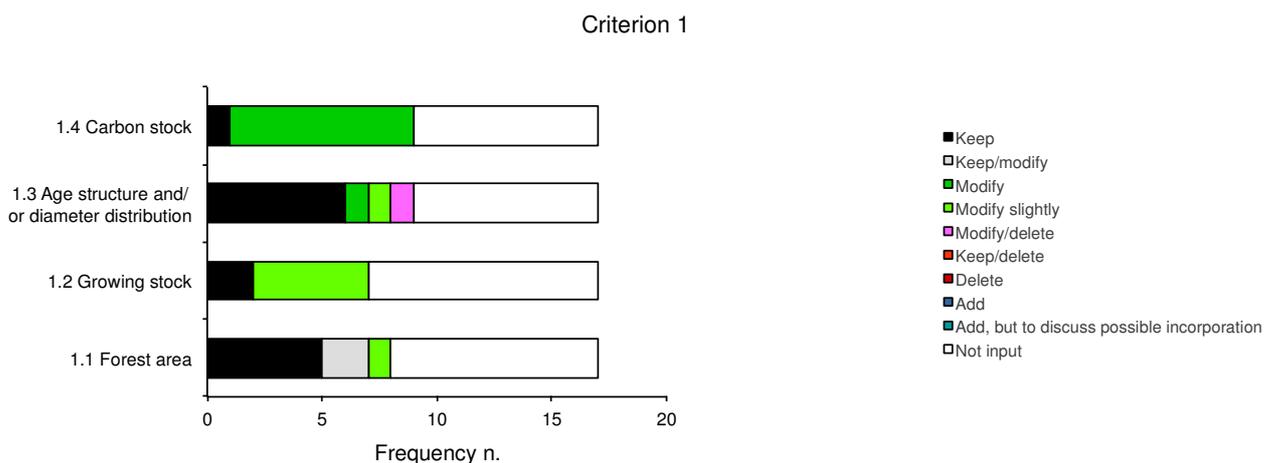
Criterion 1

Figure 1 Frequency of replies (type of input) received and not inputs from 15 contributors for criterion 1 (quantitative indicators).

Criterion 2.

Criterion 2

Figure 2 Frequency of replies (type of input) received and not inputs from 15 contributors for criteria 2 (quantitative indicators).

Criterion 3

Criterion 3

Figure 3 Frequency of replies (type of input) received and not inputs from 15 contributors for criterion 3 (quantitative indicators).

Criterion 4

Criterion 4

Figure 4 Frequency of replies (type of input) received and not inputs from 15 contributors for criterion 4 (quantitative indicators).

Criterion 5

Criterion 5

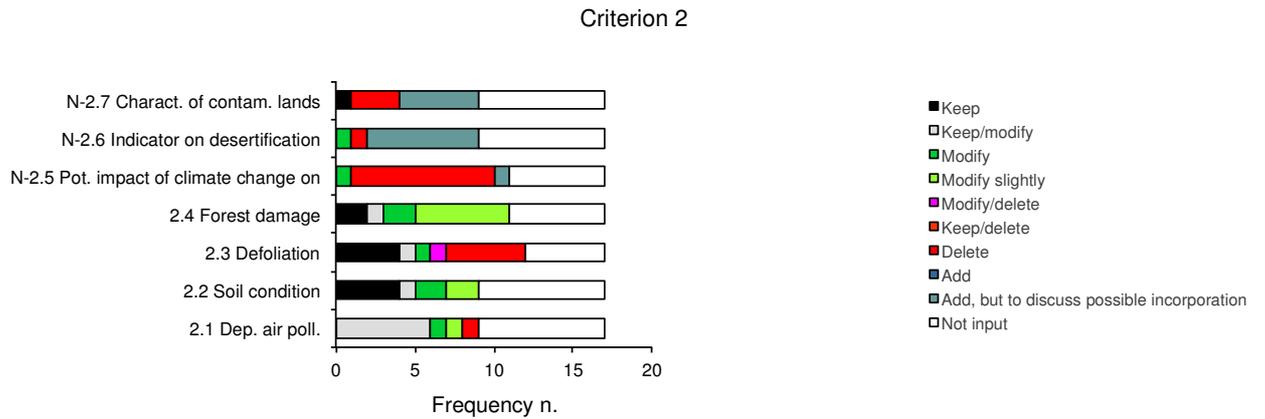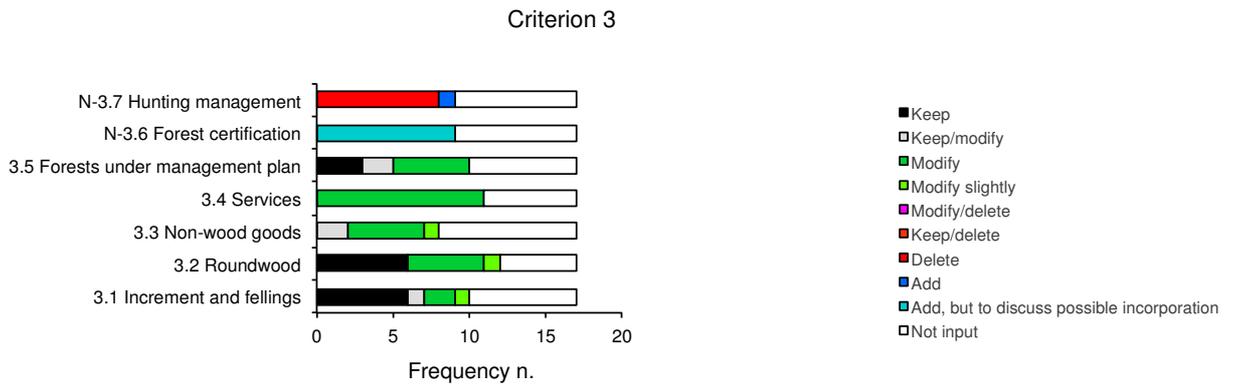*Figure 5 Frequency of replies (type of input) received and not inputs from 15 contributors for criterion 5 (quantitative indicators).*
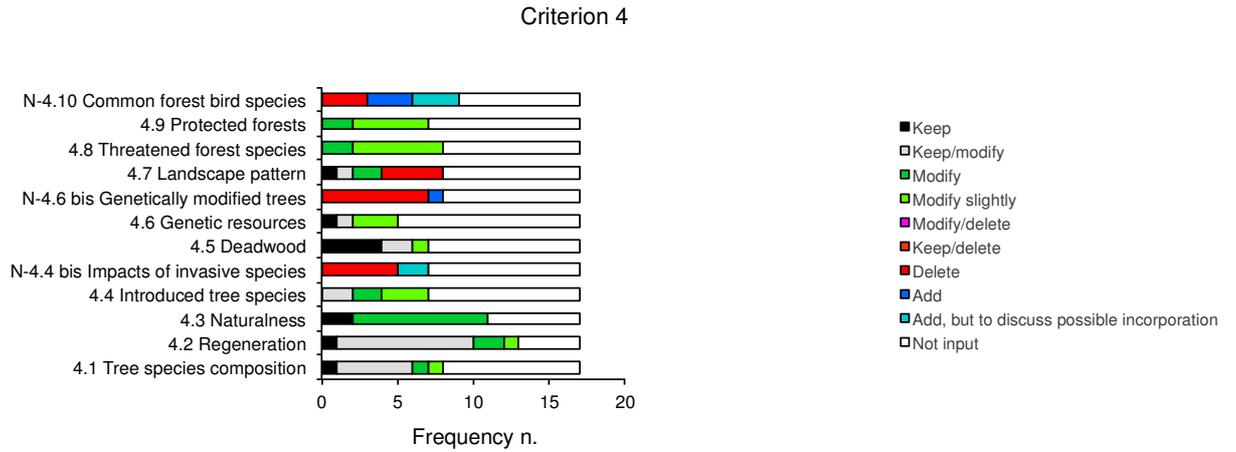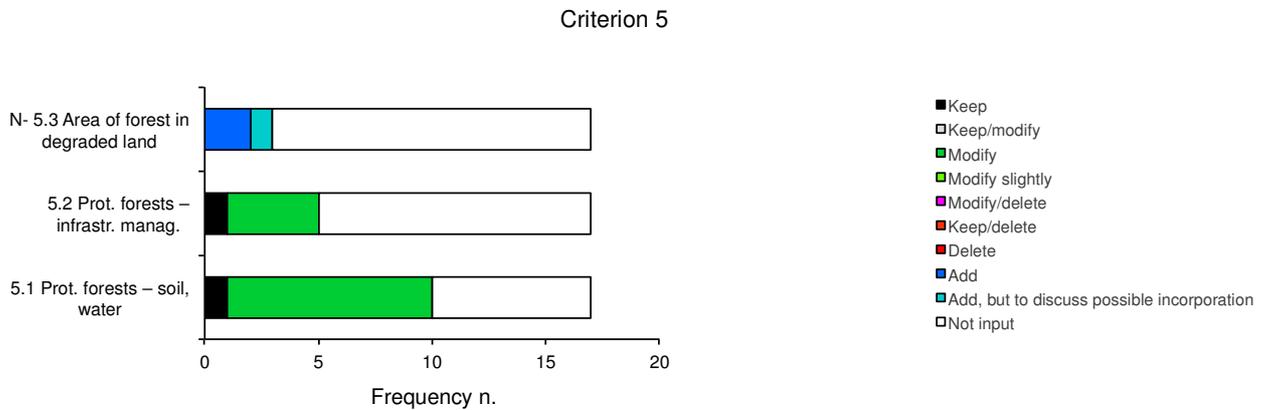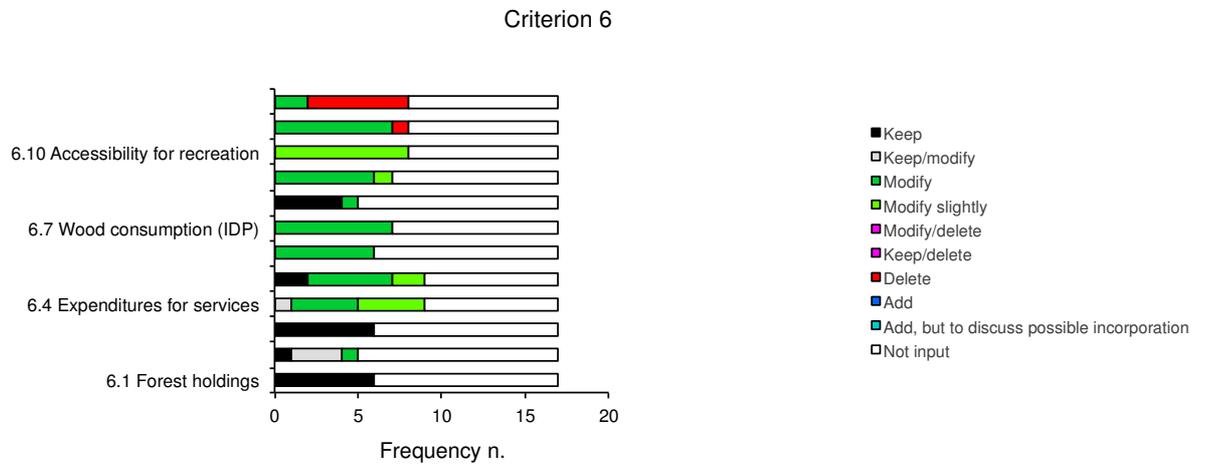
Criterion 6

Criterion 6

Figure 6 Frequency of replies (type of input) received and not inputs from 15 contributors for criterion 6 (quantitative indicators).

Appendix I. Table of replies (number and type of input) received from 21 contributor countries and three organisations for each indicator. Coding: K=Keep, K/M= Keep/Modify, M=Modify, MS=Modify slightly, M/D=Modify/Delete, K/D= Keep/Delete, D=Delete, A=Add, ADI=Add, but to discuss possible incorporation, NI=Not input. Continue on next pages.

Indicator	K	A	ADI	M	MS	D	NI	M/D	K/D	K/M	SUM
Criteria 1: Maintenance and Appropriate Enhancement of Forest Resources and their Contribution to Global Carbon Cycles											
1.1 Forest area	5	0	0	0	1	0	8	0	0	1	15
1.2 Growing stock	2	0	0	0	5	0	8	0	0	0	15
1.3 Age structure and/or diameter distribution	5	0	0	1	1	0	7	1	0	0	15
1.4 Carbon stock	1	0	0	8	0	0	6	0	0	0	15
Criteria 2: Maintenance of Forest Ecosystem Health and Vitality											
2.1 Dep. air poll.	0	0	0	1	1	1	7	0	0	5	15
2.2 Soil condition	4	0	0	1	2	0	7	0	0	1	15
2.3 Defoliation	3	0	0	1	0	5	4	0	0	1	14
2.4 Forest damage	1	0	0	1	5	0	7	0	0	1	15
N-2.5 Potential impact of climate change on forests	0	0	0	0	0	9	6	0	0	0	15
N-2.6 Indicator on desertification	0	0	7	0	0	1	7	0	0	0	15
N-2.7 Characteristics of contaminated lands (Ukrainen proposal)	1	0	4	0	0	3	7	0	0	0	15
Criteria 3: Maintenance and Encouragement of Productive Functions of Forests (Wood and Non-Wood)											
3.1 Increment and fellings	6	0	0	1	1	0	6	0	0	1	15
3.2 Roundwood	6	0	0	4	0	0	5	0	0	0	15
3.3 Non-wood goods	0	0	0	5	1	0	7	0	0	2	15
3.4 Services	0	0	0	10	0	0	5	0	0	0	15
3.5 Forests under management plan	2	0	0	5	0	0	6	0	0	2	15
N-3.6 Forest certification (Ukraine proposal)	0	0	8	0	0	0	7	0	0	0	15

Indicator	K	A	ADI	M	MS	D	NI	M/D	K/D	K/M	SUM
N-3.7 Hunting management (Ukraine proposal)	0	1	0	0	0	8	6	0	0	0	15

Criteria 4: Maintenance, Conservation and Appropriate Enhancement of Biological Diversity in Forest Ecosystems

Indicator	K	A	ADI	M	MS	D	NI	M/D	K/D	K/M	SUM
4.1 Tree species composition	1	0	0	0	0	0	9	0	0	5	15
4.2 Regeneration	1	0	0	1	0	0	4	0	0	9	15
4.3 Naturalness	3	0	0	8	0	0	4	0	0	0	15
4.4 Introduced tree species	0	0	0	2	3	0	8	0	0	2	15
N-4.4 bis Impacts of invasive species	0	0	2	0	0	5	8	0	0	0	15
4.5 Deadwood	4	0	0	0	0	0	9	0	0	2	15
4.6 Genetic resources	1	0	0	0	3	0	10	0	0	1	15
N-4.6 bis Genetically modified trees	0	1	0	0	0	7	7	0	0	0	15
4.7 Landscape pattern	1	0	0	2	0	4	7	0	0	1	15
4.8 Threatened forest species	0	0	0	1	6	0	8	0	0	0	15
4.9 Protected forests	0	0	0	1	5	0	9	0	0	0	15
N-4.10 Common forest bird species	0	3	3	0	0	3	6	0	0	0	15

Criteria 5: Maintenance and Appropriate Enhancement of Protective Functions in Forest Management (notably soil and water)

Indicator	K	A	ADI	M	MS	D	NI	M/D	K/D	K/M	SUM
5.1 Protected forests – soil, water and other ecosystem functions	1	0	0	8	0	0	6	0	0	0	15
5.2 Protected forests – infrastructure and managed natural resources	1	0	0	3	0	0	11	0	0	0	15
N- 5.3 Area of forest in degraded land	0	2	0	0	0	0	13	0	0	0	15

Criteria 6: Maintenance of other socioeconomic functions and conditions

Indicator	K	A	ADI	M	MS	D	NI	M/D	K/D	K/M	SUM
6.1 Forest holdings	6	0	0	0	0	0	9	0	0	0	15
6.2 Contribution of forest sector to GDP	1	0	0	1	0	0	10	0	0	3	15
6.3 Net revenue	6	0	0	0	0	0	9	0	0	0	15
6.4 Expenditures for services	0	0	0	3	4	0	7	0	0	1	15

Indicator	K	A	ADI	M	MS	D	NI	M/D	K/D	K/M	SUM
6.5 Forest sector workforce	1	0	0	5	1	0	8	0	0	0	15
6.6 Occupational safety and health	0	0	0	6	0	0	9	0	0	0	15
6.7 Wood consumption (IDP)	0	0	0	7	0	0	8	0	0	0	15
6.8 Trade in wood	4	0	0	1	0	0	10	0	0	0	15
6.9 Energy from wood resources	0	0	0	6	0	0	9	0	0	0	15
6.10 Accessibility for recreation	0	0	0	0	6	0	9	0	0	0	15
6.11 Cultural and spiritual values	0	0	0	7	0	1	7	0	0	0	15
N-6.12 Communication and public relation	0	0	0	1	0	6	8	0	0	0	15

Annex 4. – Other considerations/reflections

- 3.1. Increment and fellings: reporting note not to double-counting the dead losses into the fellings.
- 4.1. Diversity of tree species: reporting consideration reflecting the 'origin' of the data, if feasible to ask about it. Be aware that some countries use figures from forest management plans, some other have different sizes of referent units (1ha, 10 ha or more).
- 4.2. Regeneration: when addressing reporting schemes could be beneficial to include the category 'unknown'.
- 6.4. Investment in forests: In the reporting notes it can be consider collecting specific information related to investments in research, information, communication and training.
- When addressing reporting on Payment for Ecosystem Services, some categories can be tackled, e.g. including considerations on financial support to Climate Change adaptation.