Sustainable Forest Management and Biological Diversity under Changing Needs of Society

- as an Example the European Situation

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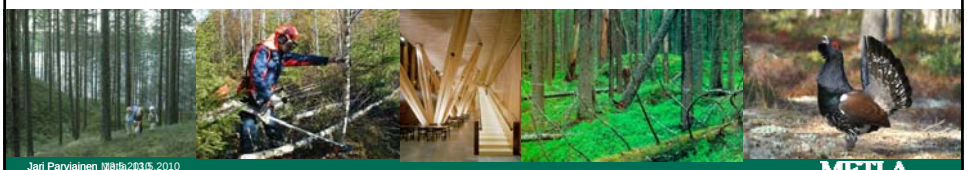

Content

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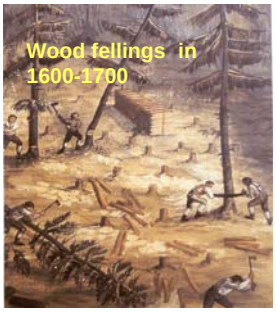
2. Concept on Sustainable Forest Management(SFM)
3. Biodiversity related to the forests
4. Monitoring of SFM under changing requirements
5. CBD post 2010 targets and European forest biodiversity

Main goal: How the status of European forest biodiversity can be monitored and illustrated

1. Specific characteristics of European forests

These three factors influence on the biodiversity with clear difference in compare to other continents

1. **Forests are altered**
2. **Forests are fragmented**
3. **Specific ownership structure private, family ownership dominates**



2. Concept on Sustainable Forest Management(SFM)

The term "sustainable" was first related to sustainable yield of forest resources and probably first mentioned by the German

Hans Carl von Carlowitz in 1713

Uncontrolled use and overexploitation of forest in Europe led to establishment of organized forestry systems in 1700

2. Concept on Sustainable Forest Management(SFM)

Modern concept based on UNCED in RIO 1992

MCPFE = Ministerial Conference on the Protection of Forests in Europe since 1990, 46 countries

New name FOREST EUROPE

Strasbourg	1990
Helsinki	1993
Lisbon	1998
Vienna	2003
Warsaw	2007
Oslo	2011

2. Concept on Sustainable Forest Management(SFM)

Sustainable management was defined for the purposes of MCPFE in **Helsinki Conference 1993** in the Resolution H1 (item D) and it 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."

2. Concept on Sustainable Forest Management(SFM)

Linkages between Sustainable Forest Management (SFM) and Ecosystem Approach (EA) by CBD

It has been clarified in Europe in 2004 that the concepts:

the **Ecosystem Approach (EA) and Sustainable Forest Management (SFM**) have **the same goal** to promote the conservation and management practices in forests which are environmentally, socially and economically sustainable.

The Sustainable Forest Management can be considered as a **means of applying the ecosystem approach to forest** in the pan-European region.

2. Monitoring of SFM by Pan-European criteria and indicators (2003)

1. Forest Resources
- Forest area
- Growing stock
- Age structure/ Diameter distribution
- Carbon stock
- Energy from wood resources

2. Forest Health
- Deposition of air pollutants
- Soil condition
- Defoliation
- Forest damage

3. Productive Functions (Wood and Non-Wood)
- Increment and fellings
- Roundwood
- Non-wood goods
- Forests under management plans
- Services

QUANTITATIVE INDICATORS (37)

are collected under

6 CRITERIA

6. Socio-economic
- Forest holdings
- Contribution of forest sector to GDP
- Net revenue
- Expenditures for services
- Wood consumption
- International trade in wood
- Workforce
- Employment (incl. safety and health)
- Accessibility for recreation
- Cultural values

5. Protective Functions
- Area
- Infrastructure

4. Biological Diversity
- Tree species composition
- Regeneration
- Naturalness
- Introduced tree species
- Dead wood
- Genetic resources
- Landscape pattern
- Threatened forest species
- Protected forests

In addition 12 descriptive indicators

2. Presenting the results on the SFM by indicators

The information is presented by national and international reports

Reports are based on all the available data from field and statistical surveys

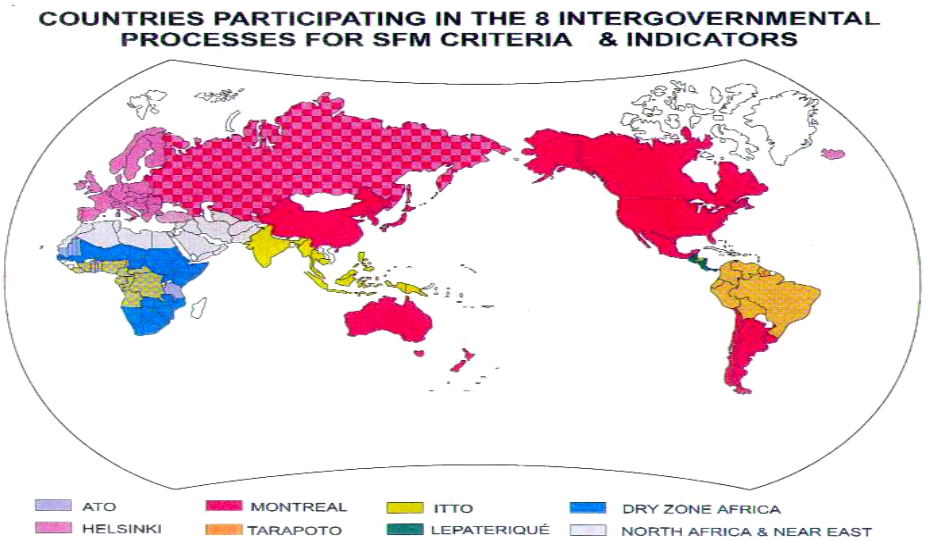
(e.g. national forest inventory data, Forest Statistics Information Services conducted by various agencies, the Environment Institutes and the regional Forest and Environment Centres)

Indicators are considered as a very important because of three aspects:

1) showing long-term trends and changes in the forests,
2) integrating the forest policy goals and decisions with the measurable indicators
3) making a continuous base for the international comparability (with harmonized terms and definitions)

2. Worldwide collaboration on (SFM) since 1996

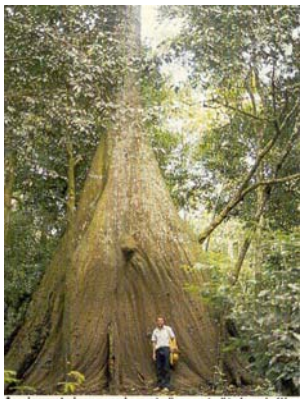
Intergovernmental process for SFM (9 processes): MCPFE, Montreal, ITTO, Tarapoto, ATO, African Dry Zone, Near East, Dry Zone Asia, Lepaterique



2. Worldwide collaboration on Sustainable Forest Management(SFM)

Seven thematic areas(criteria) for indicators agreed in 2003 in Guatemala:

1) Forest health and vitality
2) Biological diversity
3) Extent of forest resources
4) Productive functions of forest resources
5) Protective functions of forest resources
6) Socio-economic functions
7) Legal, policy and institutional framework



3. Biodiversity related to the forests

Maintaining the biodiversity in forests as understood in MCPFE countries (FOREST EUROPE)

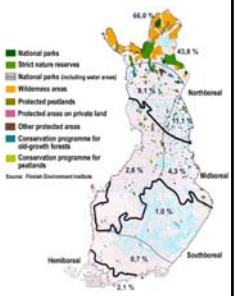
To maintain biodiversity in forests:

Both

1) the **protection area network** created in the country,
and
2) the **orientation of the forest management** outside the actually protected areas in such a way that it secures the maintenance of biodiversity on a large–scale

This success can be monitored by the numbers of **threatened species**, which can be seen as indicators of change in the forest ecosystems

PFA Network



Close to nature management

3. Biodiversity related to the forests

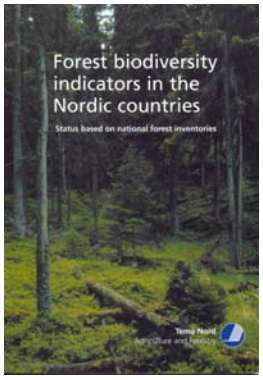
Indicators for Biological Diversity in forests (9 indicators) according to MCPFE

- Tree species composition
- Regeneration
- Naturalness
- Introduced tree species
- Dead wood
- Genetic resources
- Landscape pattern
- Threatened forest species
- Protected forests

3. Biodiversity related to the forests as ecosystem approach

SEBI 2010 = Streamlining European 2010 Biodiversity Indicators, developed 2005-2008

Aim is to develop **a European set of biodiversity indicators** to assess and inform about progress towards the European 2010 target.



First set of 26 indicator published in 2007

The work is continuing

SEBI 2010 and forest-related indicators (11 indicators)

Red colour = forest related indicators

1. Abundance and distribution of selected species
2. Red List Index for European species
3. Species of European interest
4. Ecosystem coverage
5. Habitats of European interest
6. Livestock genetic diversity
7. Nationally designated protected areas
8. Sites designated under the EU Habitats and Birds Directives
9. Critical load exceedance for nitrogen
10. Invasive alien species in Europe
11. Occurrence of temperature-sensitive species
12. Marine Trophic Index of European seas
13. Fragmentation of natural and semi-natural areas
14. Fragmentation of river systems
15. Nutrients in transitional, coastal and marine waters
16. Freshwater quality
17. Forest: growing stock, increment and fellings
18. Forest: deadwood
19. Agriculture: nitrogen balance
20. Agriculture: area under management practices supporting biodiver
21. Fisheries: European commercial fish stocks
22. Aquaculture: effluent water quality from finfish farms
23. Ecological Footprint of European countries
24. Patent applications based on genetic resources
25. Financing biodiversity management
26. Public awareness

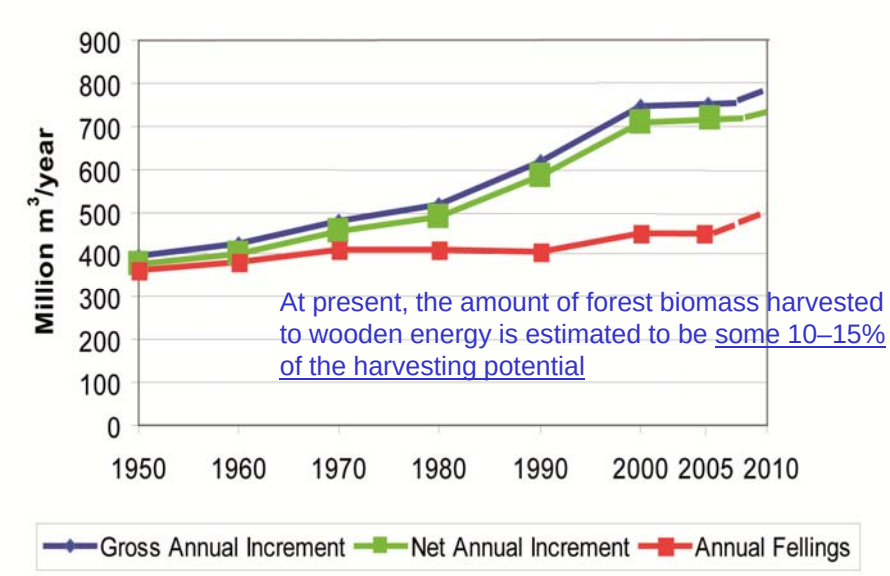
3. Forest Biodiversity –example of balanced application

Interlinkages between ecological, economic and social aspects

Economic contribution of forest sector (proportion in GDP)	Employment & ownership (forest sector work force & ownership structure)	**Socio-economic**
Forest area Protected forest areas Naturalness	Deadwood Threatened species	**Ecological**
Annual growth & cuttings (roundwood, fuelwood)	Growing stock and Carbon sequestration	**Economic Use of wood**

Economic, Pressure

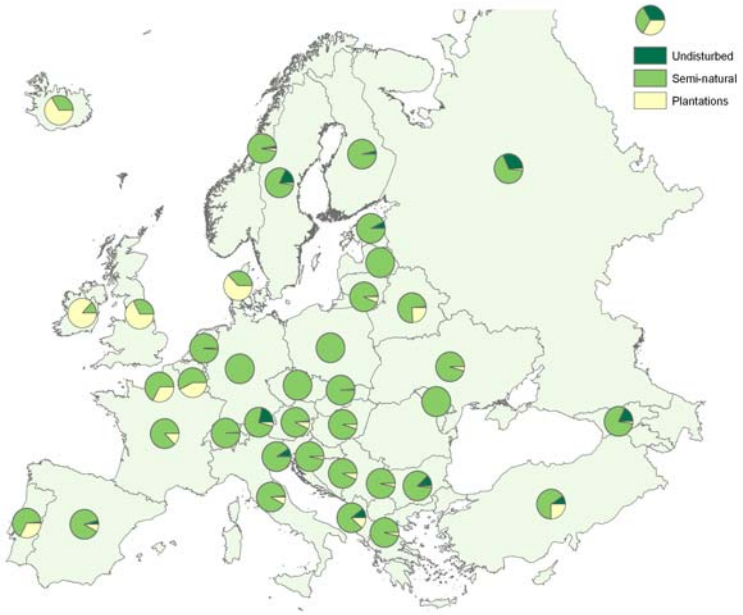
Annual increment and fellings of wood in Europe for 1950–2010



At present, the amount of forest biomass harvested to wooden energy is estimated to be some 10–15% of the harvesting potential

Ecological

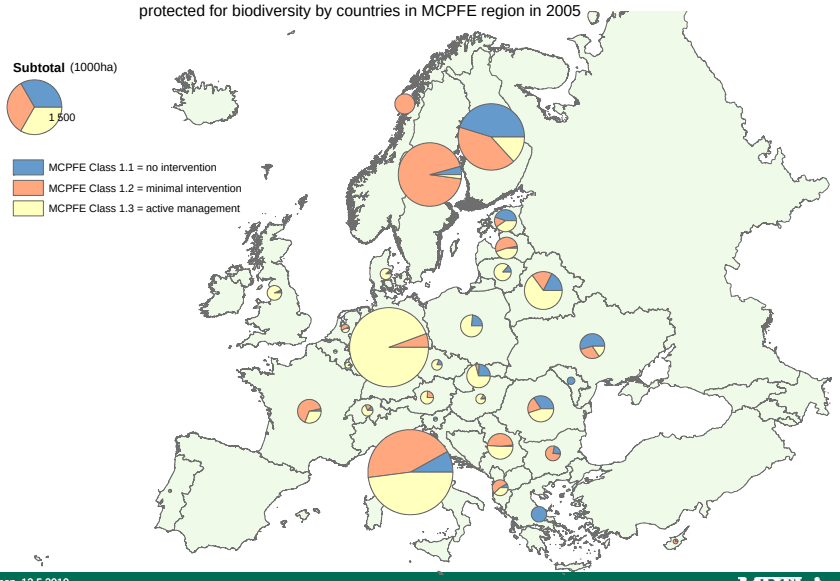
Forest area by classes of naturalness in 2005 for countries where data available



Ecological

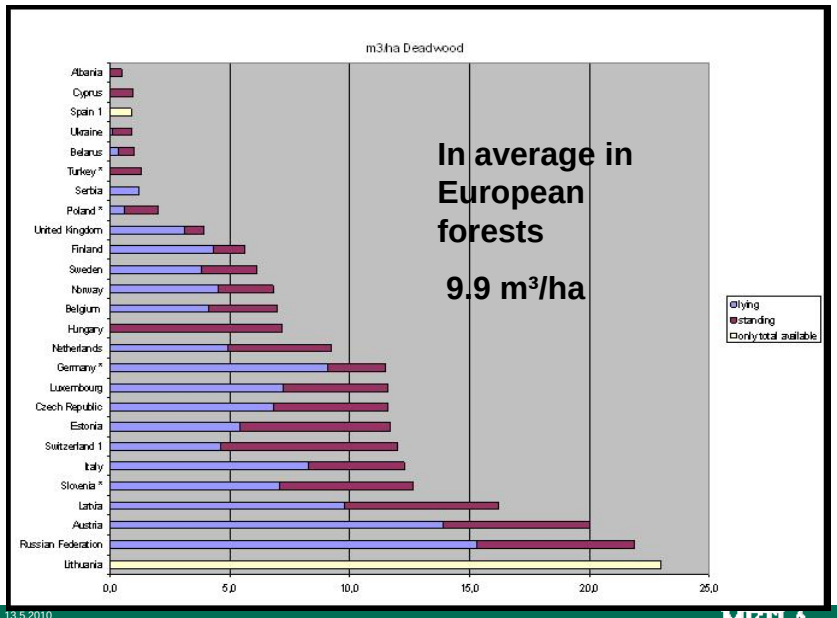
8,7 % of forest area is protected for biodiversity in Europe, and 11 % for landscape protection, in Total 20 %

Share of the MCPFE Classes 1.1-1.3 of the total forest and other wooded land area protected for biodiversity by countries in MCPFE region in 2005



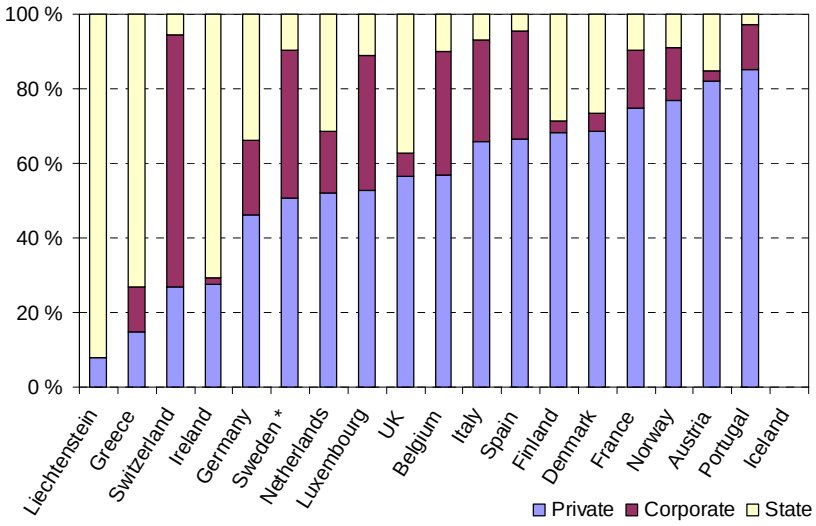
Ecological

Dead wood left mainly in commercial forests



Socio-economic

Forest ownersip structure in some European countries



KEY MESSAGES

Biological diversity in forest ecosystems in Europe

- **Forest management practices increasingly promote biodiversity**

Forest management practices have changed in ways that promote enhancement of biological diversity (natural regeneration, more mixed species stands, deadwood accumulation).

- **Less than 1% of Europe's forests are dominated by introduced tree species**

The area is around 4% is in many countries closely related to the establishment of plantations. Very few tree species are invasive, and the total area is not increasing.

- **The area of protected forests has been expanding by about 1 mill. hectares in the last 5 years to reach almost 20% of Europe's forests**

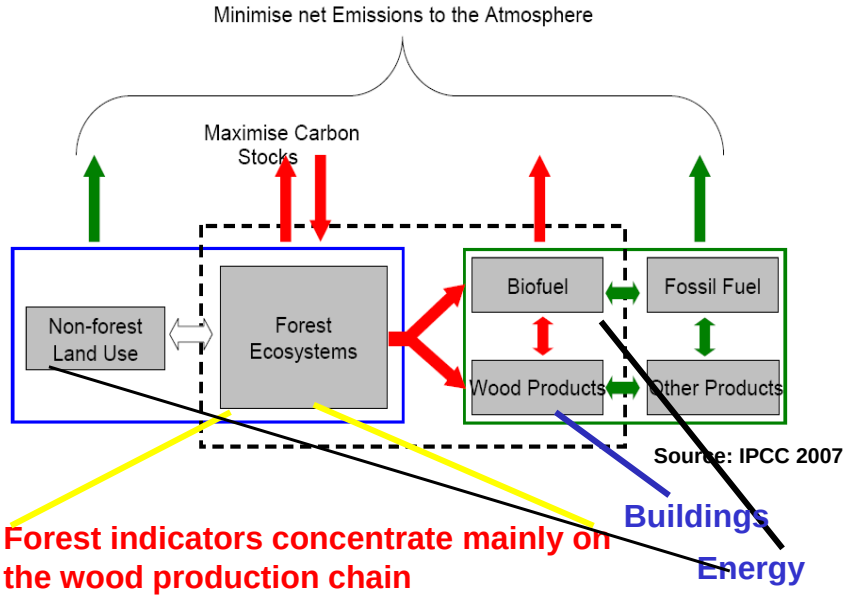
About 9% of Europe's forests are protected for biodiversity and another 11% for landscapes and specific natural elements.

4. Monitoring of SFM under changing requirements

New requirements for the forest services and use arise especially from the expected climate change and its consequencies

1. Adaptation of forest to climate change
2. Mitigation actions
   - increased use of wooden biomass
   - increased use of wood in construction
3. Inreased demand of forest services
   - human health and forests
   - water issues related to forest
   - immaterial and non-wood forest ecosystem services
4. Forest and environmental policy
   - sustainable production of biomas for energy
   - green public procurement policy
   - REDD instrument, FLEGT instrument

The role of forests in curbing the climate change



Forest indicators concentrate mainly on the wood production chain

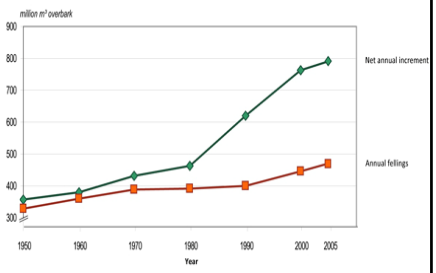
Updating the forest indicators is needed, with new elements

- **Several quantitative and qualitative new** indicators should be created according to the new policy orientations and requirements

- **Threshold values** set for indicators help to monitor the implementation of agreed measures and policies in practice.

Typical critical level (threshold):

The annual cuttings cannot exceed the annual growth on long term

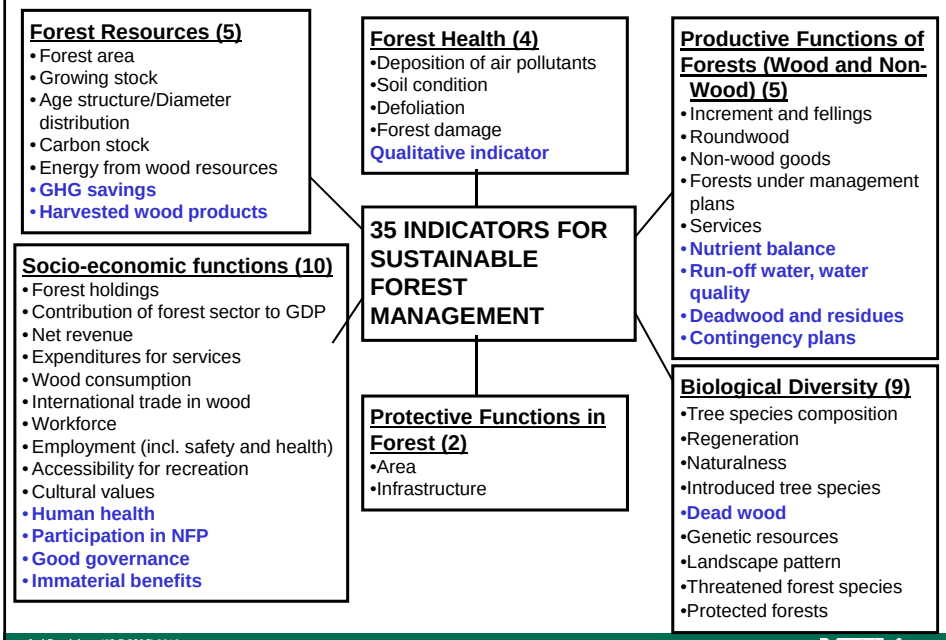


- **The verification** means the procedure by which it can be shown that the sustainability principles are fulfilled. There is need to have a verification process for SFM indicator sets in the connection of EU FLEGT, Public Wood Procurement Policy and of REDD on the country level.
- The verification procedure is typically used by forest certification on forest management unit level. By MCPFE tools especially the participation and good governance have to be developed verifiable

Possible new key indicators selected for climate change discussion on forests

- changes in forest area and consequently the changes in carbon sequestration,
- proposition of strictly protected area/ forest area in wood production or multifunctional purposes,
- the ratio between annual cuttings and growth of forest (data from which the carbon sequestration capacity and changes can be derived),
- carbon sequestration of harvested wood products,
- substitution aspects as GHG saving by the production of liquid biofuels, heat and electricity,
- minimizing the harmful environmental effects of biomass extraction, and
- information which kind of measures have been developed in the countries for forest adaptation: in addition to the management such as contingency plans with mapping of risk areas in the case of extreme weather phenomena.

Amendments to quantitative indicators can be easily added



5. CBD COP post 2010 targets and European forest biodiversity

Forest protection

- In Europe the main emphasis in protection for biodiversity is on active management. The share of protected forests for biodiversity with no active intervention (strict protection) is small, 0.9%. Nearly all the rare and vulnerable forests in Europe are already protected

- *The CBD SBSTTA targets 2020 (15 % protected) should take into account the local forest conditions and all legal instruments available (legal protection areas, voluntary legal contracts and tenders, Natura-2000 areas and close to nature management)* ***as integrated protection approach***

Climate change issues and biodiversity

- The European forests have been functioning for several decades as carbon sinks because their annual growth has exceeded fellings

- *in Europe the wood resources allow a considerably expansion within the frame of SFM including biodiversity in the use of wood for construction and also for forest bioenergy purposes, provided that close to nature forest management is used and the harmful environmental effects are minimized*

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