



Climate change and sustainable supply of softwood. An outlook for the 21st Century. The Case of Central Europe.

Think Tank Meeting. 25th November 2019, Vienna, Austria.

Summary Document

FACTS ABOUT THE MEETING

ORGANIZERS

- Organized by IUFRO, IIASA and ISS, initiated and supported by Mondi

PARTICIPANTS (see Annex 3)

- 7 scientists from 4 countries (Austria, Germany, Netherlands, France), 7 forest industry representatives (representing 4 large companies and 1 umbrella organization with a total wood purchase of more than 10 million m³ softwood per annum) and 5 organizing and moderating participants.

GOAL OF THE MEETING

- Development of an improved understanding between science and industry on future outlook of softwood in the Central European region under conditions of climate change, including overview of key challenges, options for joint actions by industry and science, information gaps and future research needs.

AGENDA OF THE MEETING

- Four scientific key notes: 1. Climate Change and forward-looking scenarios; 2. Impacts of climate change on conifer forests in Europe; 3. Softwood supply – Future trends and scenarios, quantities and qualities (short, medium, long term); 4. Trends for forest governance in Europe. (Annex 1)
- Discussion on how and who to react and formulation of possible pathways, practical solutions, associated actions and relevant stakeholders.

RESULTS OF THE MEETING

- Based on the scientific background from the keynote speakers the participants concluded that there are obvious negative impacts of climate change on forests in central Europe, which require urgent consolidated efforts of key stakeholders (Annex 2).
- Participants agreed that it is critical to continue facilitation of the dialogue and partnerships between industry and science to inform and develop practical solutions to address climate change impacts on forests and to optimize climate change mitigation contributions and wood supply from forests.
- The participants prepared a preliminary non-exhaustive list of important points for continuing the dialogue and scaling up solutions-oriented collaboration between industry and science with engagement of a broader range of stakeholders in the region.

SUMMARY OF THE EXPERT DISCUSSIONS AT THE THINK TANK MEETING

High-level general points.

- Avoiding severe climate change scenarios such as outlined under RCP 8.5 is vital for people's wellbeing, biodiversity, the economy in general, and the forest industry in particular.
- The forest sector can significantly contribute to tackling climate change. Sustainable forest management and the sustainable production and use of wood products can contribute to removing carbon dioxide from the atmosphere. However, in order to avoid severe climate change scenarios, significant efforts in all other economic sectors are required.
- Efforts to expand, protect, and sustainably manage forests (esp. for increasing their resilience) are needed to secure and increase carbon sinks, while also supporting biodiversity and people's livelihoods.
- The envisaged dialogue between science and industry should focus on improving access of forest industry to scientific knowledge and practical solutions, on engagement with multi-stakeholder platforms and landscape initiatives and on the development of climate-smart forestry education programmes.

Flexible adaptive forest management systems.

- The application of flexible adaptive forest management systems using a larger set of species and provenances can better address risks caused by climate change.
- For spruce, the potential of improving bark beetle resistance and drought tolerance through genetic selection is not very promising since this would require long-term breeding programmes (20-30 years) for producing potentially more resilient clones. More promising is to focus on other high productive conifer species such as Douglas fir, grand fir and native species such as silver fir which have proven to be more resilient to drought. However, there are limitations in productivity, resistance and tolerance of all three species when it comes to severe climate change scenarios, in particular in lowland regions and drought-prone sites with shallow soils and on south-exposed slopes.
- Assisted migration i.e. bringing drought-resistant marginal provenances of native conifer species, as well as new drought-adapted exotic species (e.g. Lebanon cedar, Atlas cedar, Nordmann fir, Turkish pine, and East Asian spruce species) to Central Europe is a promising way to adapt forests to climate change and thus to contribute to future softwood availability. However, new species and provenances must be tested.
- Producers of tree seed and planting material need to adapt to a strongly increasing demand for a broader spectrum of species and provenances and extensive provenance trials available should be used to this end.
- Geneticists see a larger potential for genetically modified (GM) trees; however, time scales for trees are longer than in agriculture. To prove the traits of the new tree may take many years and trees have a large genome making it difficult to keep the trait. Clones can behave differently on the same site. Although science holds a lot of expertise on this issue, there is lack of public acceptance for GM trees and the two main certification schemes, FSC and PEFC, do not allow the use of GM trees and organisms in the forests.
- Climate change requires a broad discussion among policy makers and stakeholders on how future forest landscapes in Europe could meet both the supply needs of the industry and the provision of multiple ecosystem services provided by forests. In other regions of the world and in some European regions too, it is increasingly accepted that forest industrial plantations, embedded in a multifunctional landscape approach, have a role to play. In the CE region historically the multifunctional forestry approach (for all forests areas) has been the mainstream.

The long-term availability of softwood and how to cope with future supply deficits

- It is argued, that currently the replacement of spruce by other softwoods or hardwoods is not feasible, because of spruce's outstanding technological and economic advantages. In the long term other species can potentially compete, e.g. pines, but alternative species such as hardwoods have fundamentally different wood properties that would require significant technological change.
- The substitution of spruce in the long term will be a technological challenge for the forest-based industry. The sawmilling industry has already thought about new, more standardized products, e.g. laminated veneer lumber (LVL), or cross laminated timber (CLT). The pulp and paper industry needs stronger collaboration with partners in order to find suitable replacement for spruce.
- In addition to technological challenges, the future availability of spruce and other softwoods in CE may be limited by societal choices (e.g. recreational uses or emphasis on conservation).

The relevant processes at the European level and how can the forest industry bring in their view

- In the EU there is no strong institutionalized forest policy. The current EU Forest Strategy will come to an end by 2020. The process of developing a new strategy/policy is currently being set up. There are quite diverse opinions in place how a new policy could be framed. The current strategy does not reflect all points of view important to the forest industry, as it was not based on a forest-wood value chain approach. At the same time other existing EU policies, such as on environment, climate and energy, do increasingly impact the forest-based industry.
- A legally binding agreement (LBA) for the pan-European area has been discussed for many years, but it seems to be unlikely that, in the short term, such an LBA will be in place. The same is true for a global forest agreement which is discussed under the UNFF (United Nations Forum on Forests), here the discussions will be taken up again in 2024.
- In the absence of a pan-European framework policy the industry could aim to enhance the dialogue with regard to policy development on a national level while not neglecting the EU level¹.

The importance of an enhanced collaboration with forest owners.

- Forest ownership in Europe is under major change. The number of urban and new forest owners, with limited knowledge about forest management and with non-economic motivations (e.g. resilient forests, biodiversity) is increasing.
- Forest owners – particularly small forest owners – in times of regionally significant forest damages need support in planning and implementing their forest restoration and adaptation activities. The role of the industry to develop new partnership models for supporting small/urban forest owners by developing service models (e.g. for forest management, felling and timber sale) should be discussed. Traditional forest owner's (mis-)perception on the potential role of alternative tree species in silviculture (e.g. silver fir grows slowly) and wood processing (sawmilling of silver fir, beech, oak) could also be addressed through educational programmes, diversifying communication channels and adapting campaigns.

¹ As an important development after the Think Tank meeting in this regard, the European Commission presented the 'European Green Deal' in December 2019 aimed at becoming the world's first climate-neutral continent by 2050. Member States can already start Climate Smart Forestry (CSF) pilots to test provenances, species, and forest management regimes in order to mitigate climate change, adapt to climate change and maintain productivity and biodiversity. A network of collaboration in CSF is needed in order to fulfil forestry's role in the European Green Deal. <https://www.wur.nl/en/newsarticle/European-forests-can-mitigate-over-20-of-total-EU-greenhouse-gas-emissions.htm>

Other aspects influencing the future availability of softwood in the CE region.

- The future supply of softwood will be influenced by a high diversity of influencing groups, actors and instruments. A shift to a more ecological perception of forest (e.g. by urban forest owners, EU commission, society) can move policy more in this direction, impacting future forest use for wood production.
- Biodiversity is a big topic for 2020. The UN CBD will adopt a Post-2020 Biodiversity Framework and the EU will develop a post-2020 EU Biodiversity Strategy. These processes offer opportunities to demonstrate and advocate – together with strong partners - future forest landscapes, which are more resilient to climate change, support the conservation and enhancement of biodiversity and at the same time meet the industry supply needs. The forest-based industry could pro-actively engage in multi-stakeholder dialogues on how the future forests landscapes in Europe can serve multiple demands. Associated communication strategies could be improved and developed.

Annex 1. Summary of the scientific background from the four keynote speakers on the climate impacts on forests in the central European region.

1. What are the projected climate change scenarios in the Central European region?

Temperature increase.

- The average annual temperature measured over the European land area during the last decade (2008–2017) was between 1.6 °C and 1.7 °C above the pre-industrial level. This makes it the warmest decade on record.
- Currently we are on a pathway to reaching a temperature increase of 3.7-5°C (RCP 8.5) across Central Europe by 2070. Under this scenario, only a few high-altitude areas in the Alps will show a mean annual temperature of below 10°C Celsius.
- The more moderate emission scenario (RCP 4.5) projects a temperature increase of 1-2°C by 2030 and 2.6-3.5°C by 2070.

Precipitation losses.

- Already for the lower concentration pathways (e.g. RCP 4.5), mountain regions and Central/Northern Europe in particular will lose between 120 -240 mm of precipitation by 2070.
- Under RCP 8.5, precipitation gains by 2030 turn into precipitation losses over all regions of Central Europe of up to 240 mm.

2. What are the related impacts on forests in the Central European region?

Recent forest damages. Norway Spruce and Scots Pine severely threatened.

- Extreme weather events and bark beetle outbreaks are the main causes of forest decline. It is estimated that forest calamities in CE (Germany, Czech Republic, Poland, Austria, Slovakia) in 2018/19 resulted in more than 180 million m³ of damage wood.
- In spruce stands, further bark beetle damages have to be expected. Even in years of favourable (colder) conditions epidemic phases of bark beetle will be prolonged by the availability of suitable hosts (breeding substrate).
- Conifers in Europe, particularly Norway spruce and Scots pine, will be strongly affected. In Austria and Germany alone more than 900 million m³ of standing wood resources in spruce forests (below 600 meter above sea level) are potentially threatened, presumably more than 1.5 billion m³ in all of Central Europe. Experts from Nordic countries have also reported a strongly rising bark beetle threat in southern and central parts of Scandinavia (Sweden, Finland).
- In Central Europe, it is expected that from 2030/40 onwards the share of spruce wood available in the market will be much smaller than it is today. The likely decrease in the availability of spruce wood resources can only partly be balanced by newly planted conifers.

- Under scenario RCP 8.5., the area burned by forest fires almost triples between now and the end of the century, reaching almost 800,000 hectares per year. Fire hotspots will be in the southern Mediterranean, southeast Europe, and the Nordic Countries, but less so in the CE region.
- Mean annual increment: Volume growth gains experienced in Central Europe in the past will fade away by 2050 at the latest (under RCP 4.5) leading to increment losses of up to 30-40% under RCP 8.5.

3. What are the related impacts on the wood market in the Central European region?

Large flow of spruce within next 20 years. Availability significantly reduced thereafter.

- In the medium term (next 20-30 years), a large flow of harvestable spruce wood with constantly increasing log diameters will enter the market. Thereafter, the market availability of conifer wood, particularly spruce, in the CE region will decrease significantly.
- Even with strong expansion of alternative conifer species (e.g. silver fir, Douglas fir) conifer wood volume losses and the probable decrease of future harvest outputs can be only balanced in the long term (50 years plus).
- The projected reduced supply of softwood cannot be compensated through increasing harvesting rates. Harvesting rates in some regions are already close to exceeding or beyond sustainable levels. It is difficult to increase harvest rates in other regions because of socio-economic reasons, unfavourable terrain (e.g. steep slopes) or resources not matching regional demand.

4. What are the main influencing drivers and socio-economic trends influencing the future availability of softwood in the CE region?

Policy frameworks at the EU level and National level.

- EU forest policy is characterized by a paradox. On the one hand, no common forest policy is provided and forestry measures are subject to the principle of subsidiarity. On the other hand, a large number of forest-related policy objectives (including on environment, climate and energy policies) affect forest and also the forest-wood value chain. Those are not sufficiently integrated across the forest-wood-value chain. This results in a weak institutionalisation of forest policy at the EU level.
- National forest policies, including legislative frameworks are much stronger, but do differ substantially within the CE region.

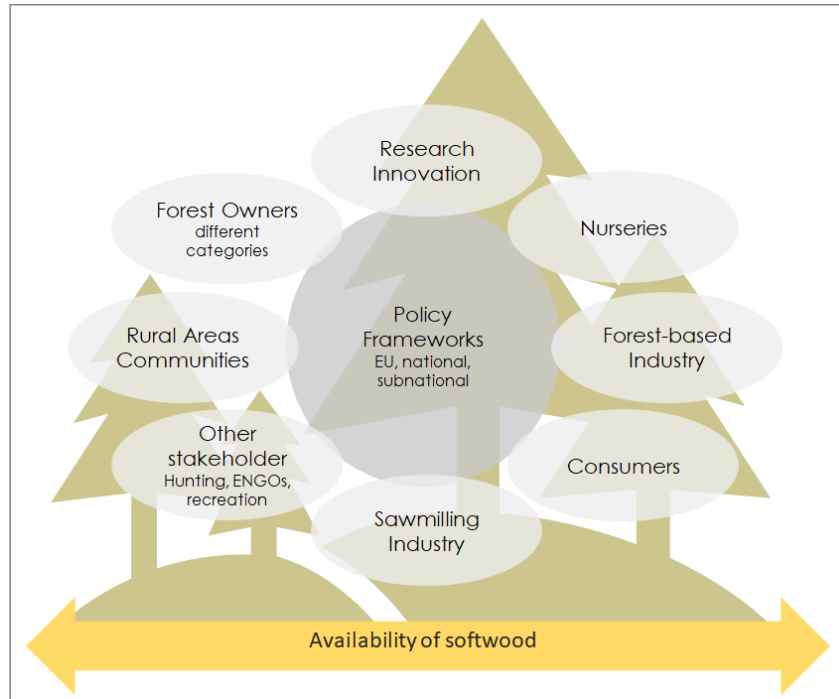
Diversity in Forest Ownership.

- Forest ownership in the CE region is highly diverse (public and private owners, small and large ones, traditional and new/urban, 'absentee' forest owners). Available data suggests that the number of new/urban/'absentee' forest owners is increasing in CE. The main motivation for managing the forests is in many cases not characterized by economic profits (e.g. through harvesting and selling wood) but more by motives such as maintaining and strengthening the resilience and biodiversity of forests. The (increasing) diversity of forest ownership can lead to difficulties in wood mobilization.

Impacting emerging trends.

- A couple of emerging trends in the CE region, particularly environmental, societal and demographic, economic, technological and governance trends, do have significant impact on forests and their forest management. For example, a trend towards older and healthier society is expected to increase the demand for forests serving recreation and human health needs. Moreover, the increasing number of urban forest owners and a shift towards a more conservation-minded perception of forests by the public at large (e.g. consumers, policy makers) can lead to a decrease in the level of wood supply. At the same time economic trends including the shift to a bioeconomy can lead to an increase in the demand for woody biomass.

Annex 2. Relevant actors influencing the future availability of softwood in the central European region (incomplete list).



Annex 3: Participants

Science key-notes

- Dr. Florian Kraxner, Deputy Director, Ecosystems Services and Management Program (IIASA) (Co-host)
- Prof. Dr. Andreas Bolte, Director, Thünen-Institut, Institute of Forest Ecosystems
- Prof. Dr. ir. Gert-Jan Nabuurs Professor European Forest Resources, Wageningen
- Dr. Helga Pülzl, Senior Researcher, European Forest Institute, c/o University of Natural Resources and Life Sciences, Vienna

Science “complementing and reflecting”

- Dr. Barry Gardiner, European Forest Institute, EFI · Planted Forests Facility
- Dr. Martin Braun, Institute for Marketing and Innovation, CarforParis Project, BOKU
- Prof. Dr. DI. Manfred Lexer, Institute of Silviculture, BOKU Vienna

Industry

- Dr. Christian Skillich, Group Director, Mondi Group
- Dr. Kurt Maier, CEO, Heinzl Holding GmbH
- DI Manfred Schachenmann, Head of Wood Supply, Mondi Group
- Denis Popov, Group Natural Resources Manager, Mondi Group
- DI Herbert Pircher, Head of Wood Procurement, Stora Enso
- DI Enzo Zadra, CEO, Norske Skog Bruck GmbH
- Dr. Christian Schnedl, CEO, Papierholz Austria GmbH

Hosts and Organizers

- DI Alexander Buck, Executive Director, IUFRO
- Dr. Michael Kleine, Deputy Executive Director, IUFRO
- Mag. Gerda Wolfrum, Coordinator PR & Communication, IUFRO
- Mag. Renate Prüller, Project Coordinator (IUFRO)
- DI Gerald Steindlegger, Consultant, Integrated Sustainability Solutions