

## IBFRA insight process – Sustainable boreal forest management – challenges and opportunities for climate change mitigation

The circumboreal forest is a vast region with considerable diversity in forest ecosystem types, drivers of carbon dynamics, vulnerability to climate change, and types and intensity of forest management. The impacts of global environmental changes are already affecting the boreal forest. At present, large scientific uncertainties remain about the magnitude and direction of the future contribution of boreal forests to the global greenhouse gas balance. This uncertainty has major policy implications for the level of mitigation efforts that will be required in other sectors, if future atmospheric CO<sub>2</sub> concentration targets are to be achieved.

Many opportunities exist to enhance the contribution of the boreal forest to domestic greenhouse gas emission reduction targets, largely through enhancement of forest productivity and reducing natural disturbances, through the use of wood products to store carbon, and by substituting harvested wood products for fossil based products, steel and concrete to reduce emissions in other sectors. The most appropriate mitigation actions will depend on the current forest conditions, climate change impacts, and the socio-economic and institutional context for mitigation actions. Therefore, mitigation strategies need to be regionally-differentiated portfolios of activities designed to meet carbon and other forest management objectives. Impacts of climate change on the forests need to be considered so that mitigation actions can be designed to also yield benefits for enhancement of forest resilience to climate change impacts and for other adaptation objectives.

This IBFRA insight process originates from the circumboreal ministerial meeting in June 2018 where the ministers adopted the Haparanda declaration with a view to strengthen cooperation between boreal countries. It will address climate change impacts, role of forests in mitigating climate change and the ways in which the forest sector can contribute to net negative emissions with the ambition to be an *IPCC-like assessment of scientific consensus on selected topics*. The IBFRA insight process should be transparent and balanced and result in a scientifically-credible document, not to be a “promotional” or advocacy paper, but a scientific assessment of the potential of the boreal forest to contribute to climate change mitigation. The overall goal is thus to present a study endorsed by an international team of experts from six boreal countries, peer-reviewed, and based on science and analyses.

The writing and review process will involve a team of authors who will summarise their understanding of the state of the science in a zero order draft of the findings, to be circulated among all others who will comment to prepare the first order draft. This will be subject to an external review by a wider team of international experts who will be asked to provide written comments on the first order draft (by line number), a response from the authors to the review comments, and the drafting of a second order in which external review comments are addressed. This second order draft will be reviewed and approved by the steering committee comprised of representatives from IBFRA, SLU, and the funding agency (or agencies).

The Future Forests platform at the Swedish University of Agricultural Sciences will take the lead of this insight process. Together with a committee of members appointed by the board of IBFRA the Future Forest platform will share responsibility to find representative experts from the boreal countries and ensure transparency in the process. The Swedish Forest Agency and the Future Forest platform will finance the process within the framework of their missions from the Swedish government.

### Work-plan

September-November 2018, project design and consultations with boreal partners.

December 2018-January 2019, insight expert team identified.

January 2019, a lead author for a scientific report is appointed by the Future Forests platform, about 6 months of work starting January 2019.

An open seminar will be held at the “Forest Day” January 23, 2019, in Stockholm, Sweden (Grand Hotel) where the insight process will be presented, i.e. the formal start of the process. Ambassadors from the boreal forest countries and members of the Circumboreal Working Group will be invited.

Regular Skype-meetings will be held with the insight process expert team. Administrative support will be provided by the Future Forest platform. Prior to the first workshop, we will agree on an outline of the report, assign responsibilities to groups of authors (by topic or by region) and prepare research (literature review) on the key topics. We will also agree on the analytical framework to use.

A workshop with the insight process expert team will be held in Sweden May 2019. Travel grants will be provided by the Future Forests platform. The board of IBFRA will also be invited.

An additional workshop will be held in another boreal country during the second half of 2019 (to be decided).

A first draft of written report will be circulated August 2019.

Preliminary results will be presented to policy makers at the Joint COFFI/EFC session in November 2019

Final report will be presented December 2019.

### **Outline of topics and content of report**

The report will address climate change impacts, role of forests in mitigating climate change and the ways in which the forest sector can contribute to net negative emissions.

#### **Basic information (Jan-March 2019)**

We will first collect basic information about the boreal countries, i.e. standard figures such as forest land area, ownership, governance etc. This will allow mitigation strategies to be regionally-differentiated and designed to meet other forest management objectives but also to consider short- and long-term perspectives, major obstacles like governance, lack of infrastructure and people and so on.

#### **Climate change mitigation (Feb 2019-)**

The forest binds carbon dioxide, and to supply raw materials and energy to support a fossil-free economy. Research in this area is rapidly evolving and is often used in the societal debate on whether it is most effective to use or preserve forests to mitigate climate change. We define climate change mitigation as the potential for reductions in CO<sub>2</sub> and other greenhouse gas emissions or increases in CO<sub>2</sub> removal relative to a baseline, i.e. business-as-usual scenario. This is an important starting point because the Paris Agreement requires something “better” than we have today. The boreal forest sector has the potential to provide significant additional climate benefit that can help achieve a fossil-free society with no net emissions of greenhouse gases. We will draw upon already existing integrative frameworks to explore the relation between silviculture and climate change mitigation. We will then apply these results at regional and national scales to estimate the both the short- and long-term climate change mitigation potential of various changes in silviculture considering both the substitution effects and the effects of carbon stock changes in the forest and in

harvested wood products. The method can also estimate mitigation effects of new product-use strategies or if large managed forest areas are set aside for safeguard of biodiversity, recreational values and other non-wood based ecosystem services. The availability of quantitative estimates of climate benefit will allow for improved estimates of the trade-offs associated with changes in land-use and forest production. Hence, our comprehensive lifecycle analyses approach integrating biological and technological processes will enable the identification and analyses of different short- and long-term strategies to carbon management through land-use in boreal forests.

### **Negative net emissions of CO2 (Feb 2019-)**

The system borders to use when we discuss net negative emissions have to be agreed upon: Is there a restriction to the forest or is the society included? Together with the quantitative estimates of climate benefit it will hopefully allow an initiated discussion of if/how future forests can contribute to negative net emission of CO<sub>2</sub>.

### **Budget**

The proposed budget includes research coordination, lead author's commitment, travel and accommodation for three researchers from each of Canada, USA, Norway, Finland, Russia and Sweden (besides the research coordinator and the lead author who both also comes from Sweden) to come to two workshops, one in Sweden and one in Russia. In addition, accommodation and travel for the lead author and the research coordinator to attend the planned events with the policy actors.

Research coordinator 60 %: Lina Arnesson Ceder	495 000 SEK
Lead author 25 %:	350 000 SEK
Travels of participating researchers to two workshops:	
o From Canada	90 000 SEK
o From USA	90 000 SEK
o From Norway	30 000 SEK
o From Finland	30 000 SEK
o From Russia	50 000 SEK
o From Sweden	25 000 SEK
Travels for research coordinator and lead author	60 000 SEK
Accommodation for 20 people at two three-day workshops	350 000 SEK
Accommodation during extra travels for RC and LA	30 000 SEK
Extra preparative travels and accommodation for RC	100 000 SEK
 Total	 1 700 000 SEK

### **Funding**

SLU will cover costs for the research coordinator and half of the lead author, in total 670 000 SEK and the Swedish Forest Agency will cover half of the lead author as well as travel and accommodation, in total 1 030 000 SEK.