



# Circumboreal Cooperation and the IBFRA Insight Process

Werner A. Kurz  
Natural Resources Canada  
Canadian Forest Service



Circumboreal Cooperation – the way forward  
Vancouver, BC, Canada, November 6, 2018



**COFFI 2018**



Natural Resources  
Canada

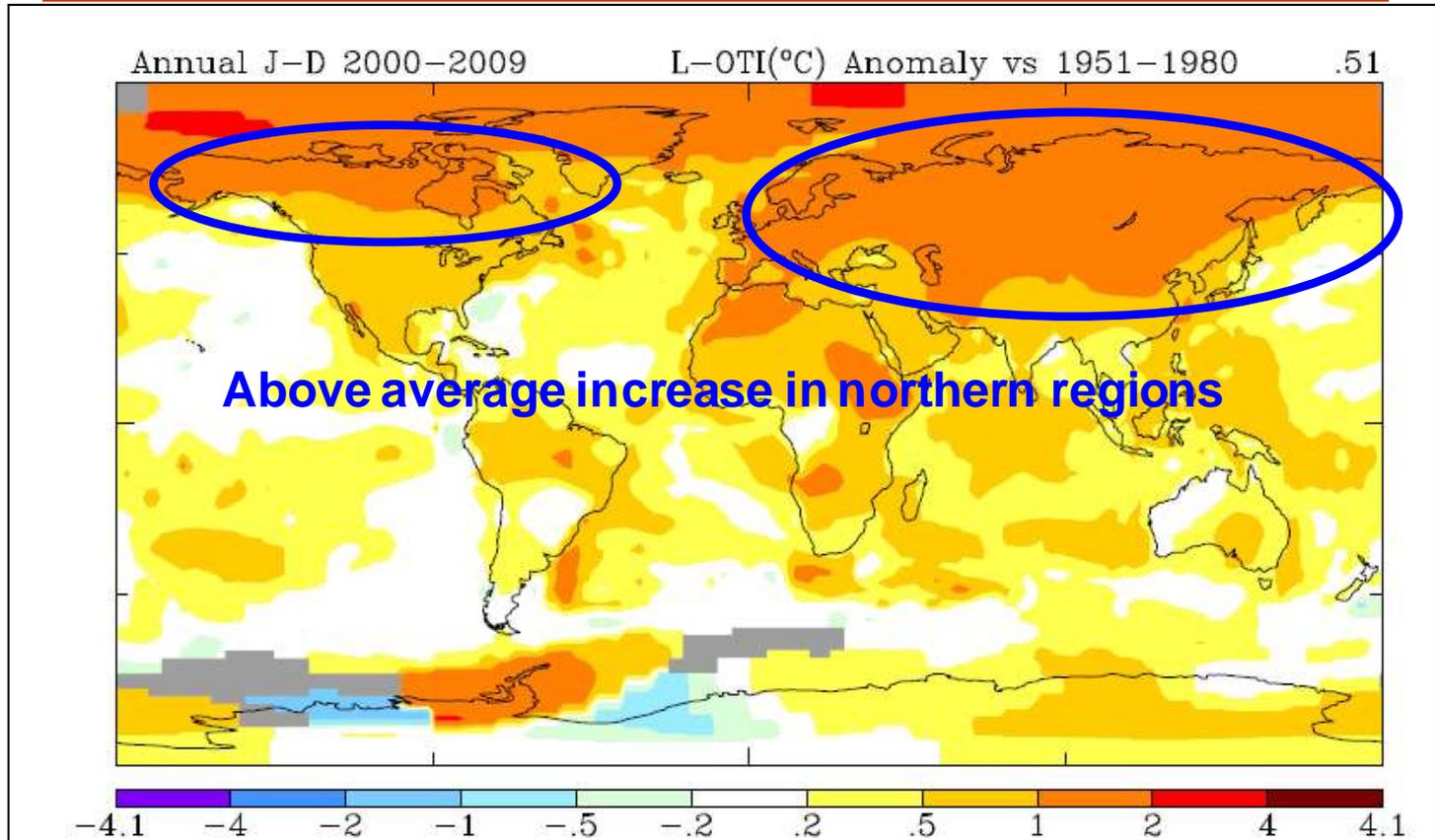
Ressources naturelles  
Canada

Canada

## GLOBAL WARMING OF 1.5 °C

- Average global temperature increase could reach 1.5°C by 2030.
- Limiting global warming to 1.5°C **requires rapid and far-reaching transformations in energy systems, land, industry buildings, transport and cities.**
- To limit global warming to 1.5°C, global CO<sub>2</sub> emissions would have to decrease by approximately 45 percent from 2010 levels by 2030, and reach net zero by approximately 2050.

# 2000-2009: Observed above average temperature increases in boreal



Source: NASA GISS, 2010

# Climate change impacts are felt around the world. And much more to come!



## GHG Balance of boreal forests

Carbon stocks are large, mostly in soils due to slow decay.

**Net GHG balance** is the **small difference** of large emissions (decomposition and fires) and large removals (growth).

**All major processes sensitive to environmental changes** (growth, mortality, decomposition, disturbances, permafrost)

Future net balance remains challenging to predict: it will vary regionally and over time.

**Asymmetry of risk** – “slow in and fast out” (fires).

Long growth cycles to maturity can be interrupted by disturbances (fires, insects, windthrow, drought, flooding).

# Fate of anthropogenic CO<sub>2</sub> emissions (2007–2016)

**Sources = Sinks**



34.4 GtCO<sub>2</sub>/yr  
**88%**

Fossil fuel burning, cement



**12%**  
4.8 GtCO<sub>2</sub>/yr

Deforestation, land-use change

17.2 GtCO<sub>2</sub>/yr  
**46%**

**30%**  
11.0 GtCO<sub>2</sub>/yr

**24%**  
8.8 GtCO<sub>2</sub>/yr





Can this sink be sustained?



United Nations



Framework Convention on  
Climate Change

# 2015 Paris Agreement

- Goal: **limit temperature rise** to well below 2°C
- All countries must establish **targets to limit emissions by 2030**
- Countries required to **further reduce emissions after 2030**
- Most countries plan to **include forests** in their efforts
- Aim to achieve **net-zero global emissions** in the second half of the century

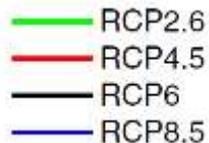
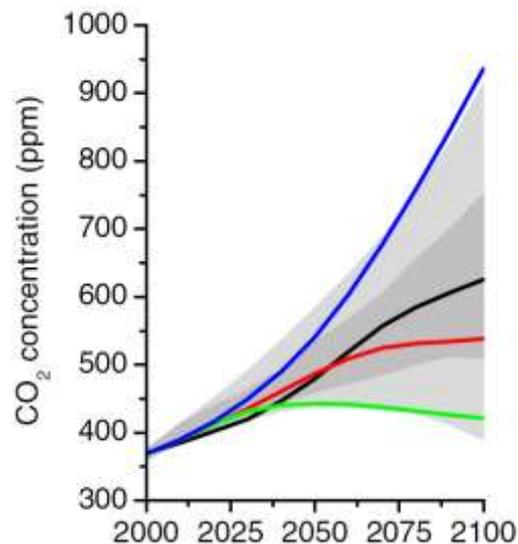


Source: K Simonson

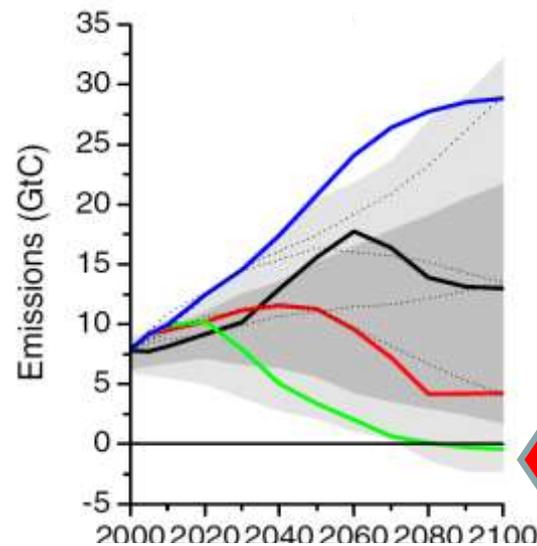
# IPCC emissions scenarios

To stay below the 2° C climate threshold **NEGATIVE** net emissions are required later in this century. **Forests can remove carbon from the atmosphere cost effectively and with multiple co-benefits but climate change can also force large releases of carbon and other GHG.**

## CO<sub>2</sub> Concentrations



## CO<sub>2</sub> Emissions



<2 °C

# Land-based Negative Emissions Technologies will affect global forest sector

Large increases in land-based carbon sinks required.

Afforestation, reforestation, restoration ... several 100 Mha to >2 Billion ha

Intensification of forest management, conservation

Increased use of long-lived wood products

Increased use of bioenergy and biomass-based liquid transportation fuels

Bioenergy with Carbon Capture and Storage (BECCS)

The bioeconomy has many potential uses for wood biomass.

**The future demand could far exceed the sustainable supply.**

# Climate change impacts affect mitigation options and biomass supply

- Impacts of environmental changes on forests will be **both positive and negative**: growth, mortality, disturbances.
- Understanding **where, when and how** these impacts will occur is necessary to design effective climate change mitigation and adaptation strategies for the forest sector.

# Boreal Forest Climate Change Impacts: Mitigation and Adaptation

We need to develop regionally-appropriate mitigation and adaptation strategies.

**Diverging views** about the best strategies, with very little consideration of climate change impacts.

What strategies are technically feasible, climate effective, sustainable and socially acceptable?

# Boreal Forests

Boreal forests will play an important role in meeting future climate goals, but they are also very vulnerable to impacts of climate change.

They receive disproportionately low attention in many international processes.

# Circumboreal Working Group

Circumboreal Working Group from the policy community of six boreal countries reached out to the International Boreal Forest Research Association (IBFRA) to explore opportunities for science collaboration among boreal countries.



# IBFRA science policy dialogue

Invited 16 scientific experts from 6 boreal countries

Haparanda, Sweden, June 24-25, 2018

Presented results at Ministerial Summit, June 26, 2018.

Two half days scientific discussion

Half day science-policy dialogue



# Workshop Report

## Background paper

- **Six examples of mitigation actions**
- **Three examples of key issues**
- **Opportunities and potential benefits of increased research collaboration among circumboreal nations**

## Results from the workshop

- Description of **Insight Process**
- **Potential topics** identified by policy community

Distributed to 200+ participants of the IBFRA18 conference in Vienna



---

## HOW CAN THE CIRCUMBOREAL FOREST CONTRIBUTE TO MITIGATING CLIMATE CHANGE?

---

Pierre Bernier, Rasmus Astrup, Ryan Bright, H el ene Genet, Elias Hurmekoski,  
Florian Kraxner, Jari Liski, Tomas Lundmark, David McGuire, Jon Moen,  
Werner Kurz, Dmitry Schepaschenko, Linda See, Anatoly Shvidenko,  
Evelyne Thiffault and Diana Tuomasjukka

DISCUSSION PAPER PREPARED FOR THE IBFRA WORKSHOP  
and  
MEETING REPORT

Haparanda, Sweden  
24-25 June 2018

INTERNATIONAL BOREAL FOREST RESEARCH ASSOCIATION

# Science-Policy Dialogue

Identified a number of topics/questions of interest to the policy community.

Agreed to address selected questions through **IBFRA Insight Process**:

- An IPCC-like assessment of scientific consensus on selected topics.
- Science-based and policy relevant - but not policy prescriptive.
- Focussed on boreal region.
- Primarily meta-analysis and synthesis.

# IBFRA Insight Process

**Insight Working Group** of IBFRA Steering Committee

(Rasmus Astrup, Raisa Mäkipää, Werner Kurz)

Identify potential **sponsors** for individual topics.

Work with **Circumboreal Working Group and sponsor** to identify topics.

Develop **Terms of Reference** for Insight Expert Team

Form **Insight Expert Teams** for specific topics.

- Representing experts from boreal countries
- Both senior and young scientists
- One hired position to help with research and writing

**Insight Working Committee** oversees review, outreach and publication process.

Develop **key messages** and **communications strategy**.

# IBFRA Insight Process

## Steps

1. Select Insight topic with Circumboreal WG and those funding the topic
2. Arrange initial workshop with 15 – 30 participants from all boreal countries
3. Prepare first draft of document
4. Review process of first draft
5. Prepare second draft
6. Arrange final workshop to complete and discuss paper (scientists + policy experts)
7. Finalise report and prepare 1 scientific paper and 1 policy brief
8. To be completed within 1 year.

# Proposed First Insight Topic

## **Sustainable boreal forest management – challenges and opportunities for climate change mitigation**

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.

Research Lead: Future Forests platform, Swedish University of Agricultural Sciences

Sponsor: Swedish Forest Agency

Insight Expert Team members: to be selected

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

Confirmation of Topic by Circumboreal Working Group (this week)

Develop Terms of Reference

Identify and invite Insight Expert Team members (**Nov-Dec 2018**)

Future Forests platform appoints (paid) lead author starting **Jan 2019**

Seminar at “Forest Day” (Jan 23, 2019) in Stockholm to present process

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

Background Research (**Jan – March 2019**)

Preliminary Analyses and Synthesis (**Feb – May 2019**)

Science workshop, author meeting in Sweden **May 2019**

First draft of written report circulated **August 2019**

Final report to be circulated **December 2019**

# Next Steps

1. Confirm first topic with Circumboreal Working Group
2. Conduct analyses for the first Insight topic
3. Identify sponsor(s) of additional topic(s)
4. Implement additional topics



# Conclusions

- Boreal forests must play a major role in reducing GHG concentrations
- But all boreal forests are also experiencing impacts of climate change
- Six boreal countries share a desire to grow their bioeconomies
- International processes have paid insufficient attention to boreal forests
- IBFRA, Circumboreal Working Group, and Swedish Forest Agency are collaborating on the first IBFRA Insight topic:
- **Sustainable boreal forest management – challenges and opportunities for climate change mitigation**
- Expected completion: December 2019
- Additional topics under consideration but require sponsors.



[Werner.Kurz@Canada.ca](mailto:Werner.Kurz@Canada.ca)



**COFFI 2018**



Natural Resources  
Canada

Ressources naturelles  
Canada

Canada