



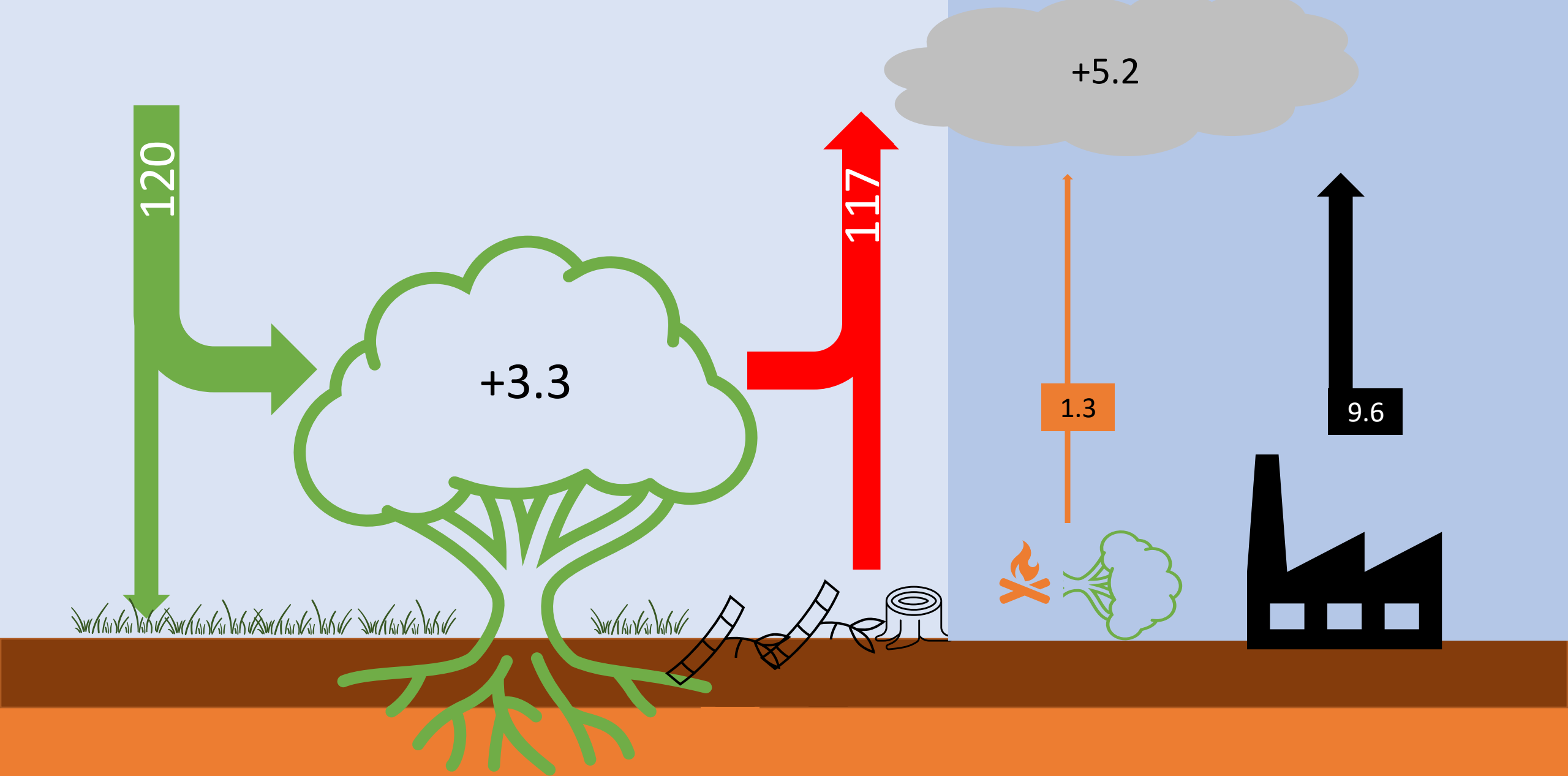
Active Forestry from a Climate Perspective

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2013-2022 (Gt C/year)

Source: Queré et al. 2015, Friedlingstein et al 2023

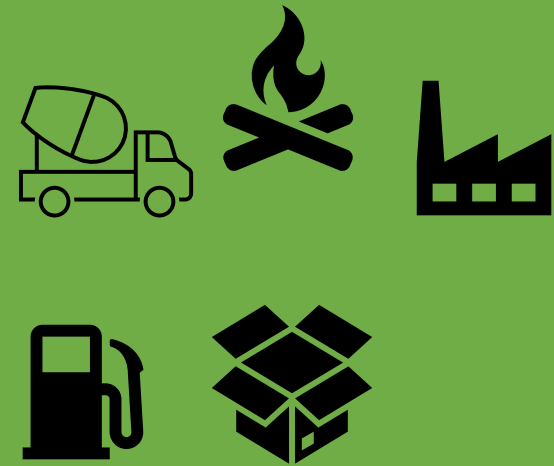
The Three Roles for the Forests to Mitigate Climate Change



Increasing the C stock
in the forest



Increasing the C stock in
harvested wood products



Replacing fossil intensive
products, fossil fuels, etc



How can we increase the forest C stock?

- Management for growth
 - Fertilisation
 - Plant breeding
 - Afforestation
- Prolonged rotation period
- Appropriate management of drained peatsoil
- Reduce harvest
- Only possible until a new equilibrium is achieved
- Risk for loss by natural disturbances (wild fire, storm, pest)



The full benefit of reducing harvests presupposes...

...a decrease in consumption of the products,
otherwise the harvest will occur elsewhere
or the forest products will be replaced with other
products



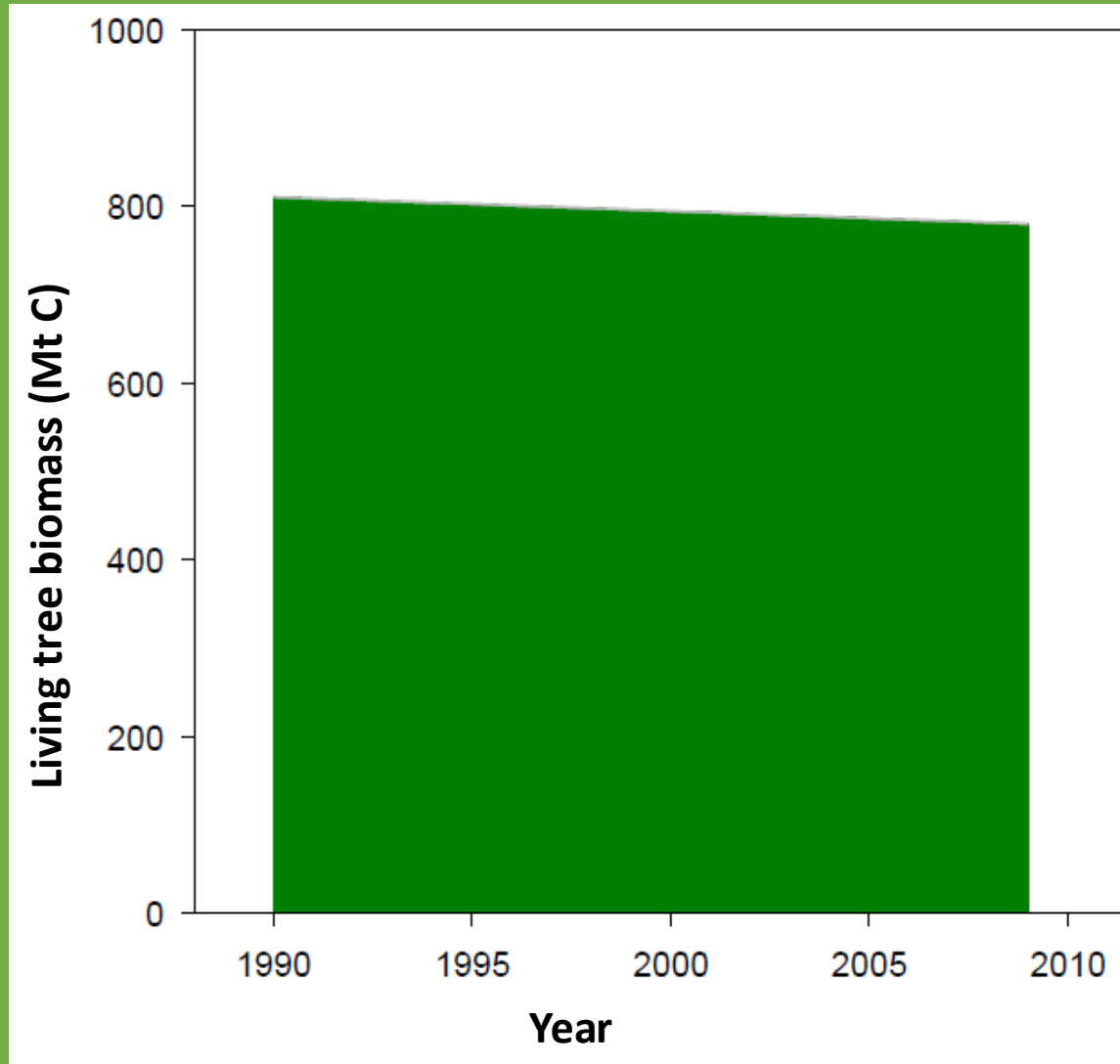
The leakage effect in EU, GB and Norway

Reducing harvest by 20 % → Leakage of 79 %
(Kallio et al 2018)

Reducing harvest by 4.5 % → Leakage of 64 %
(Päivinen et al. 2022)

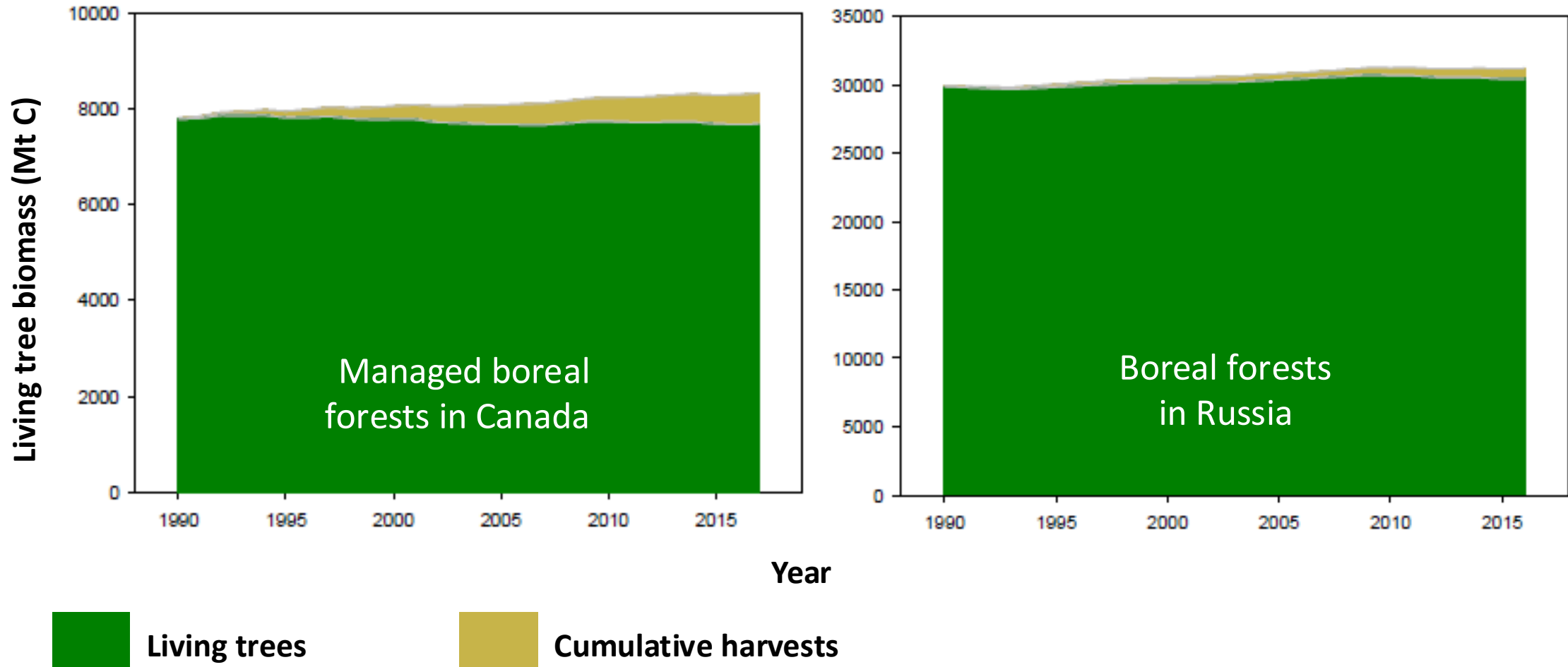
To harvest or not to harvest
-that is the question

Decrease in C stock in living trees in Alaska despite no wood harvest



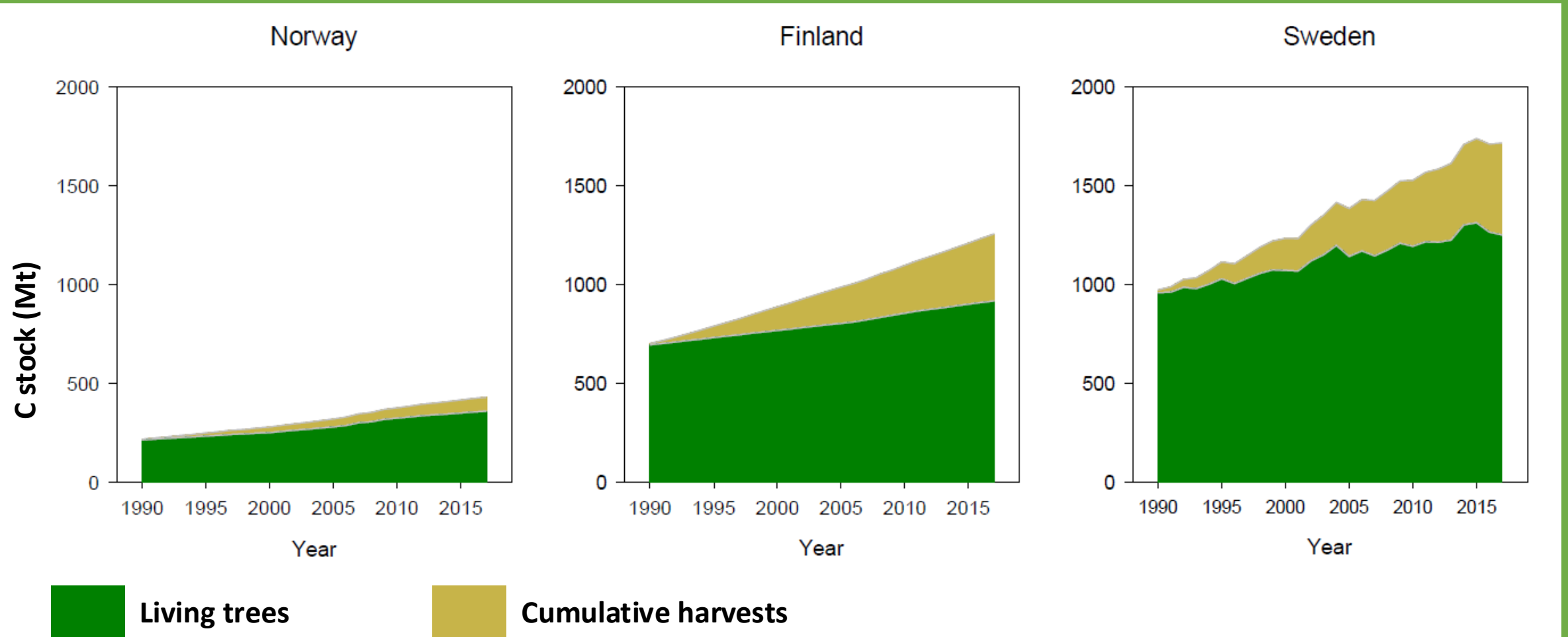
- Wildfires affects 0.6 % of forest area per year

Low intensity harvests in Canada and Russia → No change in Biomass C stock



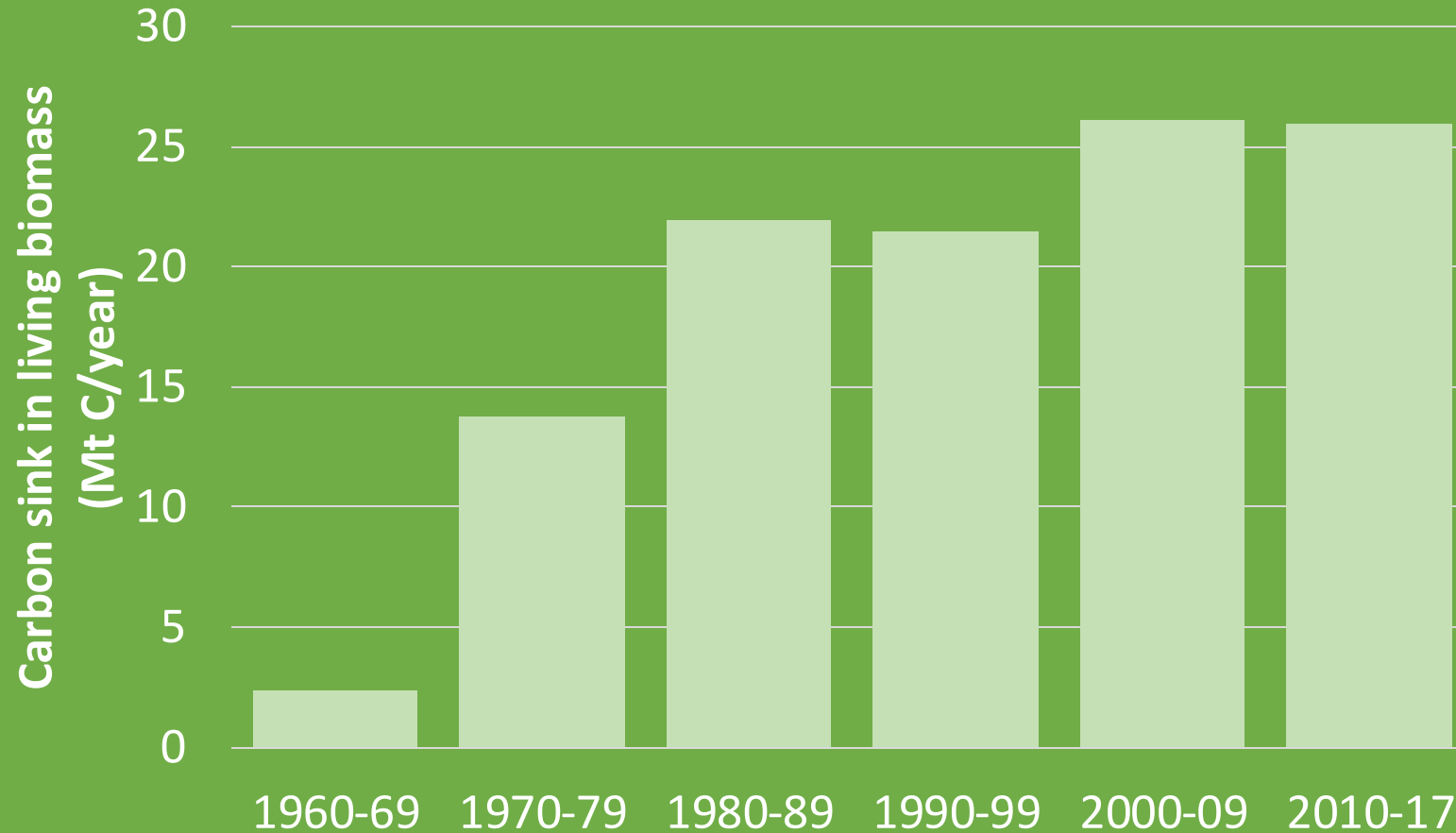
Source: Högberg et al. 2021

Strong increase in C stock in living trees in the Nordic countries



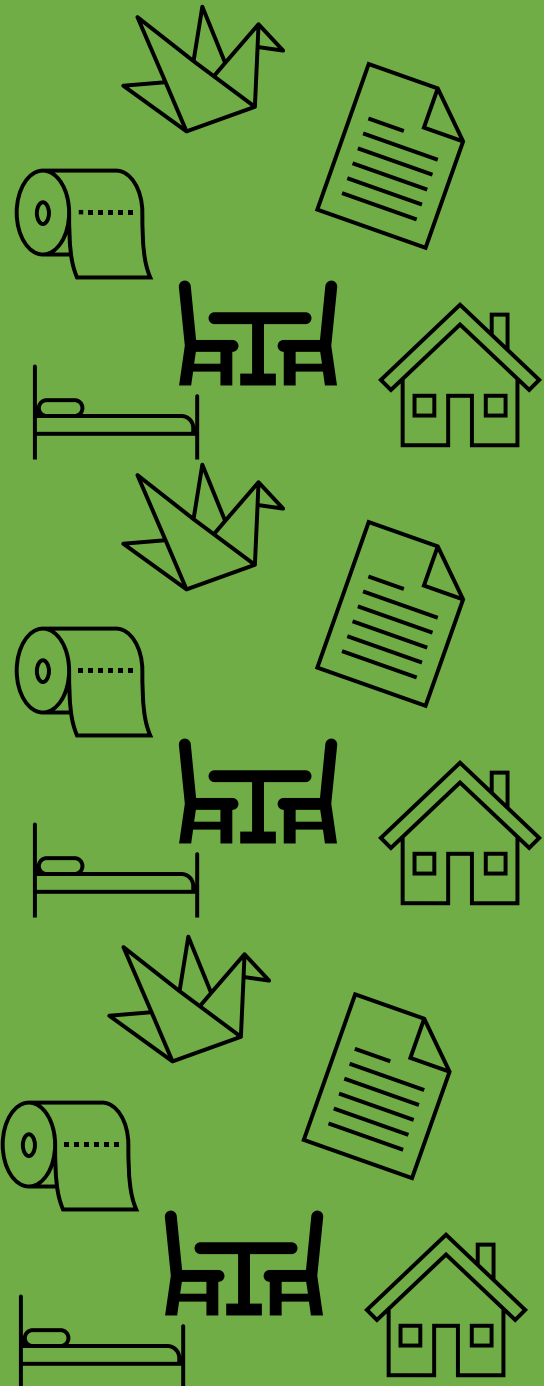
Source: Högberg et al. 2021

Norway, Sweden and Finland from 1960: Increased forest C sink and 40 % increase in harvests



How increase the C stock in harvested wood products?

- Produce more forest products
- Increase the share of long-living products
- Increase the life span

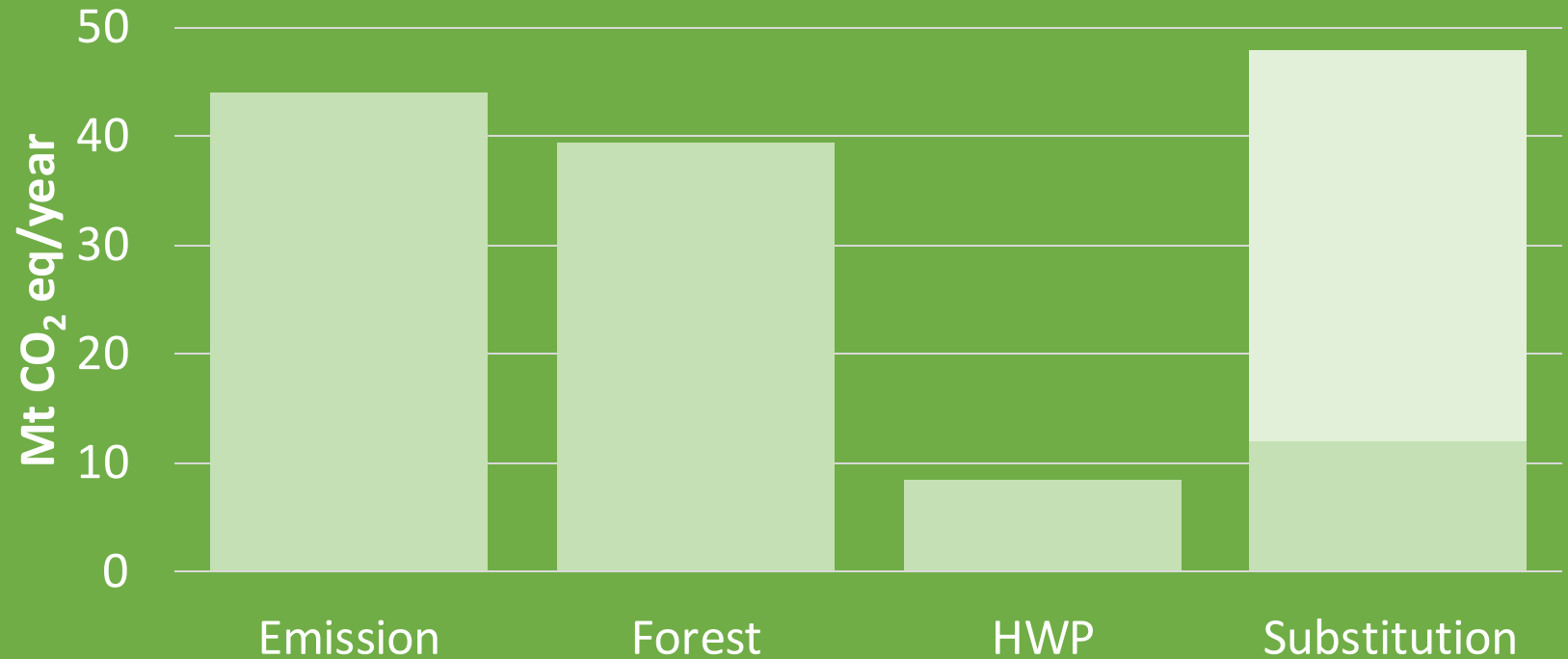




How increase the benefit of replacing fossil intensive products and fossil fuels?

- Produce more forest products in a more efficient way
- Reduce the fossil emissions in the value chain of the forest products
- Increase the longevity of the products

The magnitude of prevented emissions by replacing fossil emissions can be substantial



Sources: Swedish Environmental and Protection Agency (Forest, HWP, Emission 2020), Lundmark et al, 2014 (low substitution), Holmgren 2022 (high substitution)



We know that forest products have a climate benefit, but be careful!

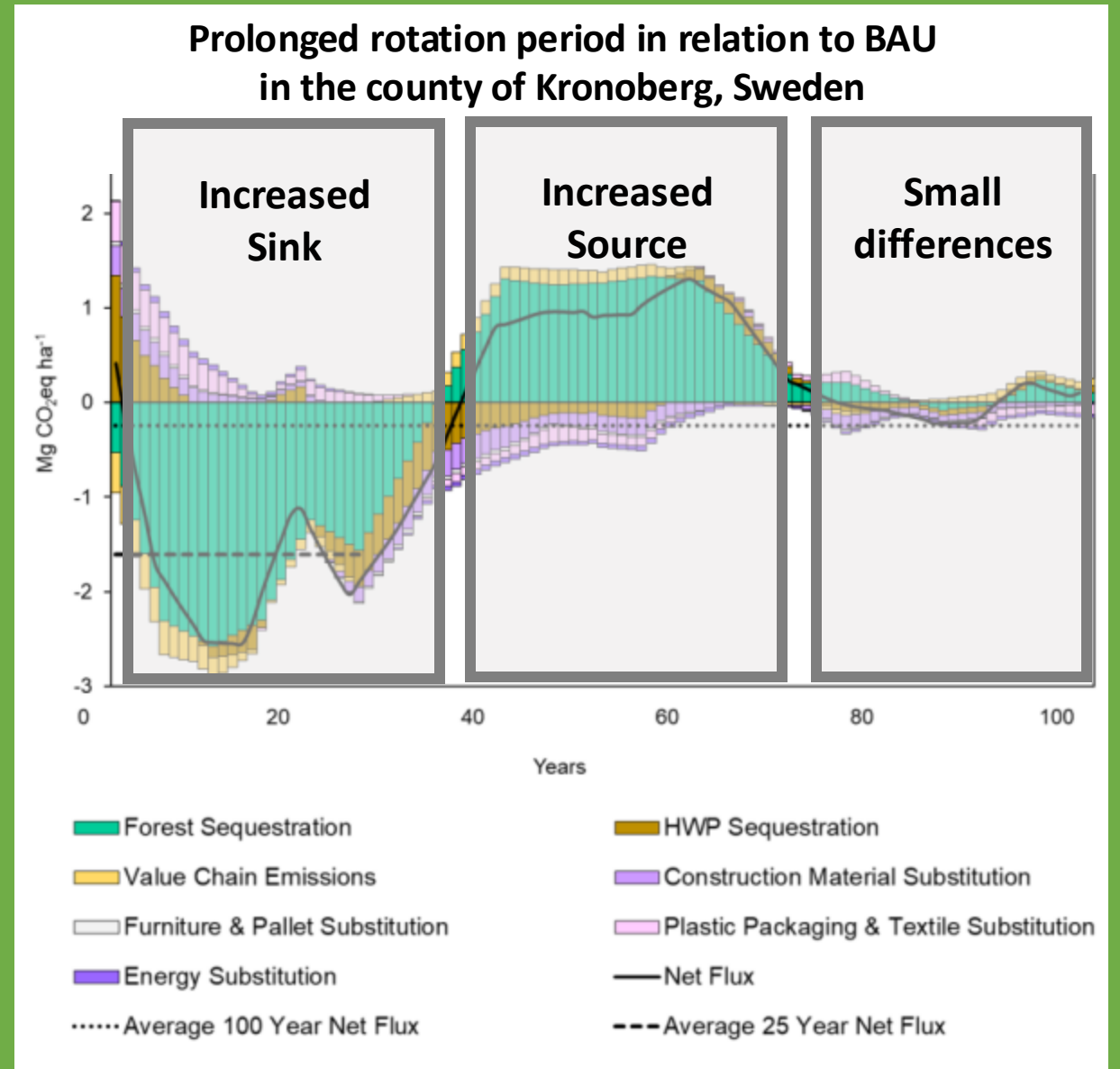


- How to calculate is debated
- What do we replace?
- Will more forest products lead to higher consumption (not replacement)?
- There is an uncertainty of the benefit in the future (climate footprint is changing)



Time matters!

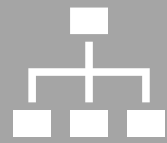
- Longer rotation increased sink the first 40 years in the county of Kronoberg



Take home message



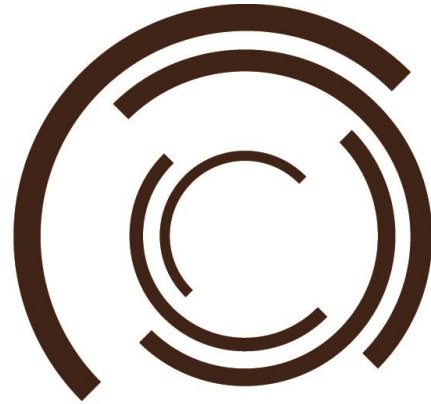
We need to take in account all three roles of the forests



We need to keep short- and long-term perspective in mind at the same time



Active forestry can mitigate climate change



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