

FUTURE FOREST MANAGEMENT ALTERNATIVES IN SOUTHERN SWEDEN

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The Swedish case study

- 13,700 small-scale forest owners own approx. 80 % of the productive forestland (40 ha).
- One of the regions in Europe with the highest utilization intensities (harvest/growth).

Species	Proportion
Norway spruce	48,2 %
Scots pine	28,8 %
Betula spp.	10,6 %
Other broadleaves	5,6 %
Noble broadleaves	6,8 %

Even-aged stands with Scots pine and Norway spruce, often with a small admixture of birch. Average clearcut size approx. 2 ha.



Kronoberg County, 650,000 ha productive forestland.

Base for Swedish Forest Policy

- Forest seen as important national (economic!) asset
- Strong forest owner associations
- Strong forest industries
- Low state involvement



“Freedom under responsibility”

Letting owners manage their forests with little regulation,
if they act responsibly, (e.g. as proved by FSC)

Develop alternatives – the approach in the Swedish case study

- Select alternatives based on interests, problems and needs **OF INFLUENTIAL STAKEHOLDERS** rather than problem formulations/research questions defined by researchers.



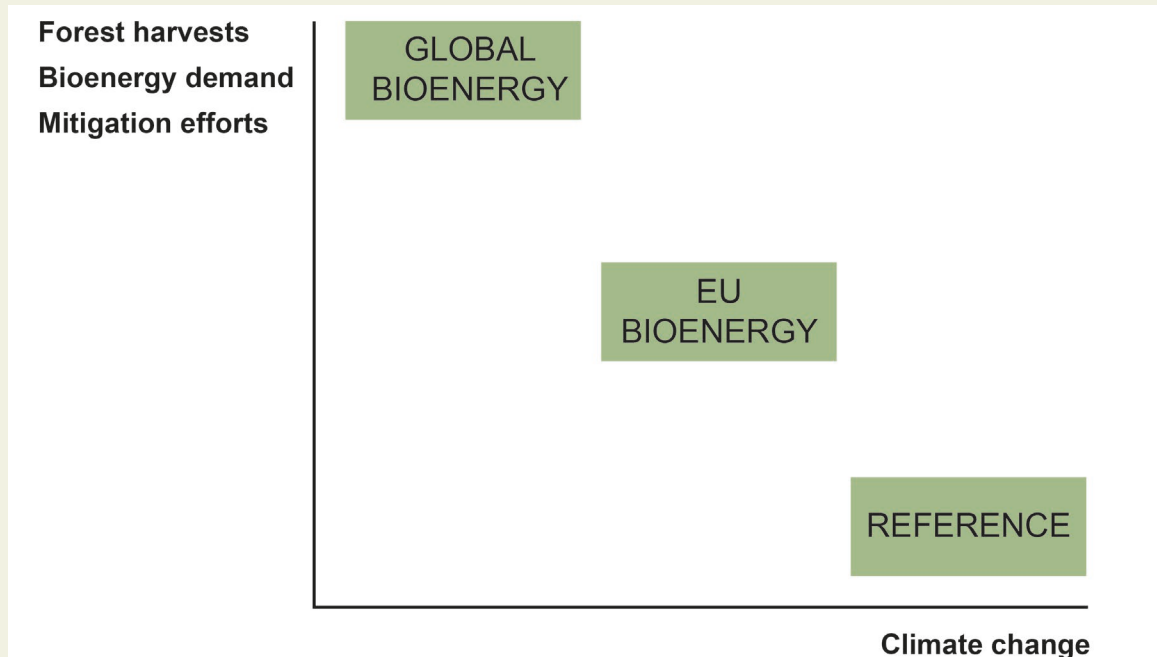
- Alternatives for increased production with the forest owner association Södra.



- Multifunctional alternatives promoting biodiversity conservation developed together with the County Administrative Board.



Future demand and climate warming - three scenarios



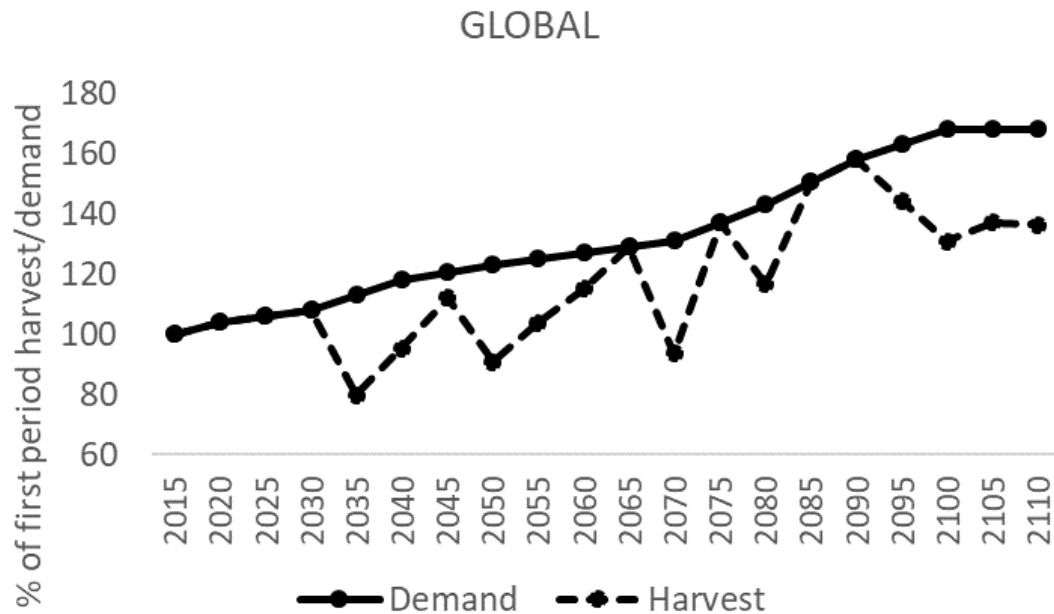
GLOBAL BIOENERGY

year 2110:

+ 1,5 ° C

+ 68 % in harvest

Results current management in GLOBAL BIOENERGY

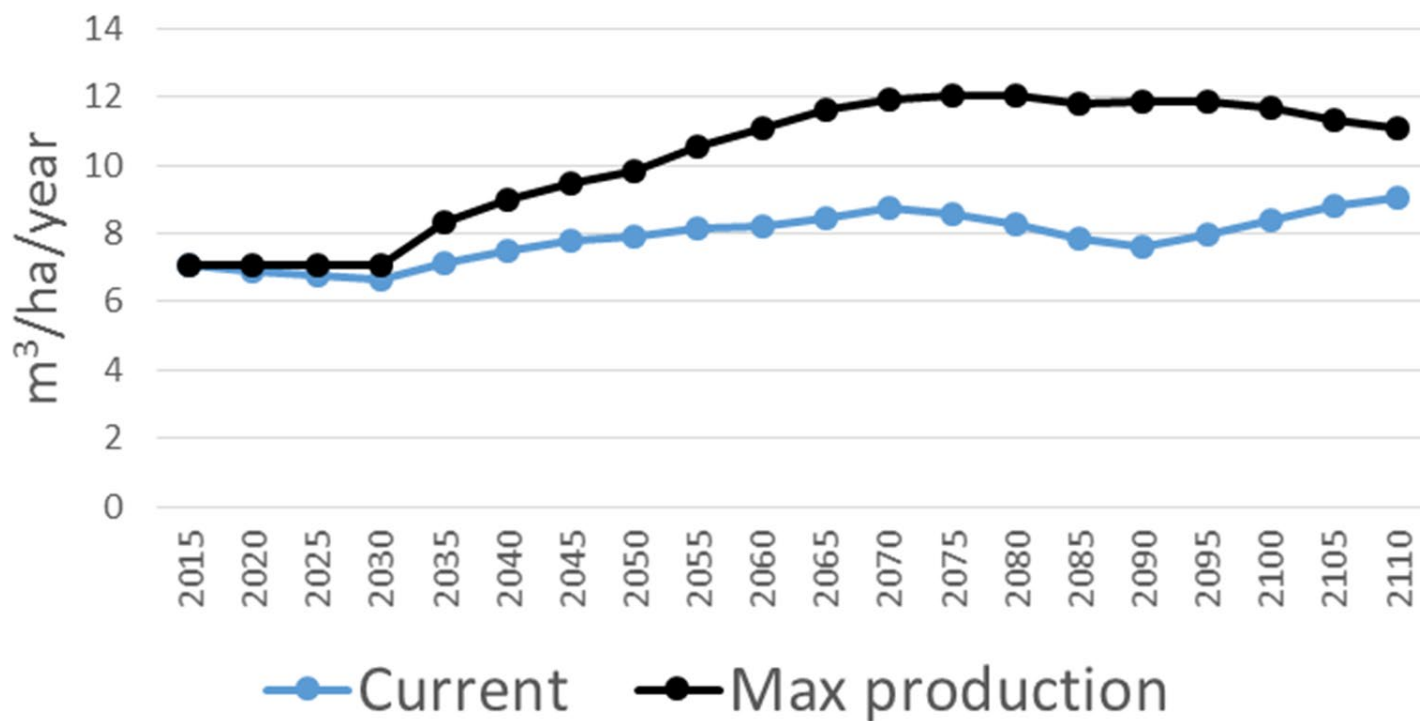


- The demand can not be satisfied with current forest management methods.
- Further intensification of forest management needed to increase growth and satisfy the demand.

Focus area 1: Investigated alternatives to increase production

- Regenerations for maximum growth (no failure, 100 % planting with seedlings from breeding programs).
- Hybrid larch
- Repeated fertilization in all pine forests (10 year interval after 16 m)
- Reforestation with the best spruces that been mass-produced through somatic embryogenesis (i.e. clonal forestry).

Growth in the production forest



Focus area 2: Improve the nature values of the production forest

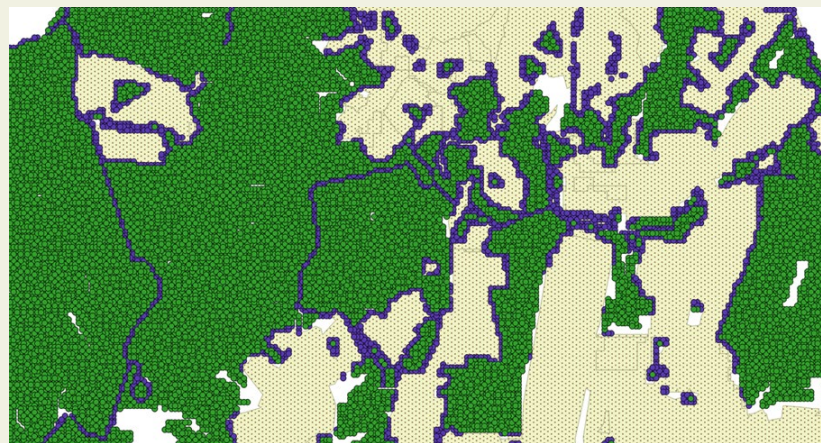
- The nature values (e.g. old trees, deadwood, broadleaves) of the production forests are crucial for conservation outcomes (low share of set-asides).
- The strong dominance of intensively managed spruce plantations is problematic. Also risky considering the ongoing climate warming.
- Collaboration with the County Administrative Board within the frames of their work with the policy project “Green infrastructure”.
- Alternatives focused on increasing the share of broadleaves.



Photo: Pär Fornling

Three alternatives to increase the nature values of the production forest

- Retaining 15 meter wide border zones adjacent to water and open areas.
- Replacing spruce plantations with Spruce-Birch mixtures.
- Replacing spruce plantations with Oak plantations.



Picture: Ljusk-Ola Eriksson



Photo: Isak Lodin



Photo: Pär Fornling

Some conclusions

- Close collaboration with actors with different interests resulted in two distinctively different focus areas, intensification for production with Södra and diversification for conservation with the CAB.
- The alternatives are related to contemporary discussions and policy initiatives regarding future forest use in Sweden e.g.
 - New goals to increase growth in Swedish forests with 20 % until 2050 (the production alternatives).
 - Ongoing campaign by the Swedish Forest Agency to promote more varied forestry through information and education (the multifunctional alternatives).

Thanks for your attention!

Reference: Lodin, I., Eriksson, L-O., Forsell, N., Korosuo, A., (2020). Combining Climate Change Mitigation Scenarios with Current Forest Owner Behavior: A Scenario Study from a Region in Southern Sweden. *Forests*, 11 (3), 346.