NIBIO
NORSK INSTITUTT FOR BIOØKONOMI

Forestry and forest nurseries in Norway

Inger Sundheim Fløistad - EFNA 29. May 2026 - Drammen



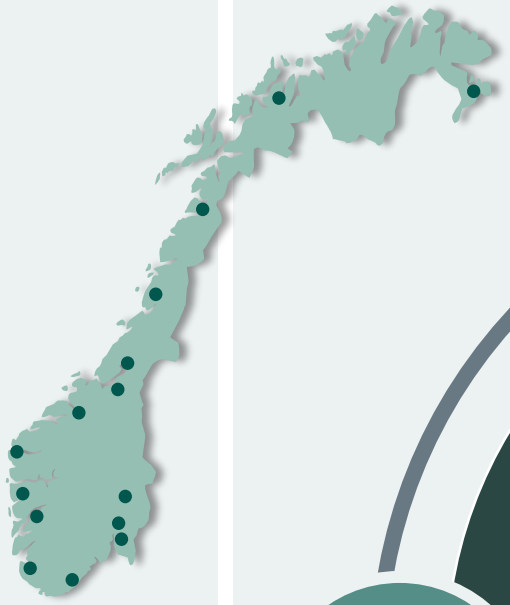
Outline

- About NIBIO
- Forestry in Norway
- Seedling production and regeneration
- Tree species



NIBIO in brief

The Norwegian Institute for Bioeconomy Research (NIBIO) is one of Norway's largest research institutes that contributes to sustainable resource management, innovation and value creation through research and knowledge production.



751
Employees

55
Different nationalities

50+
Countries with projects

15
Locations in Norway

527
MNOK
EU, RCN revenues and more

273
MNOK
Projects assigned by Ministry of Agriculture and Food

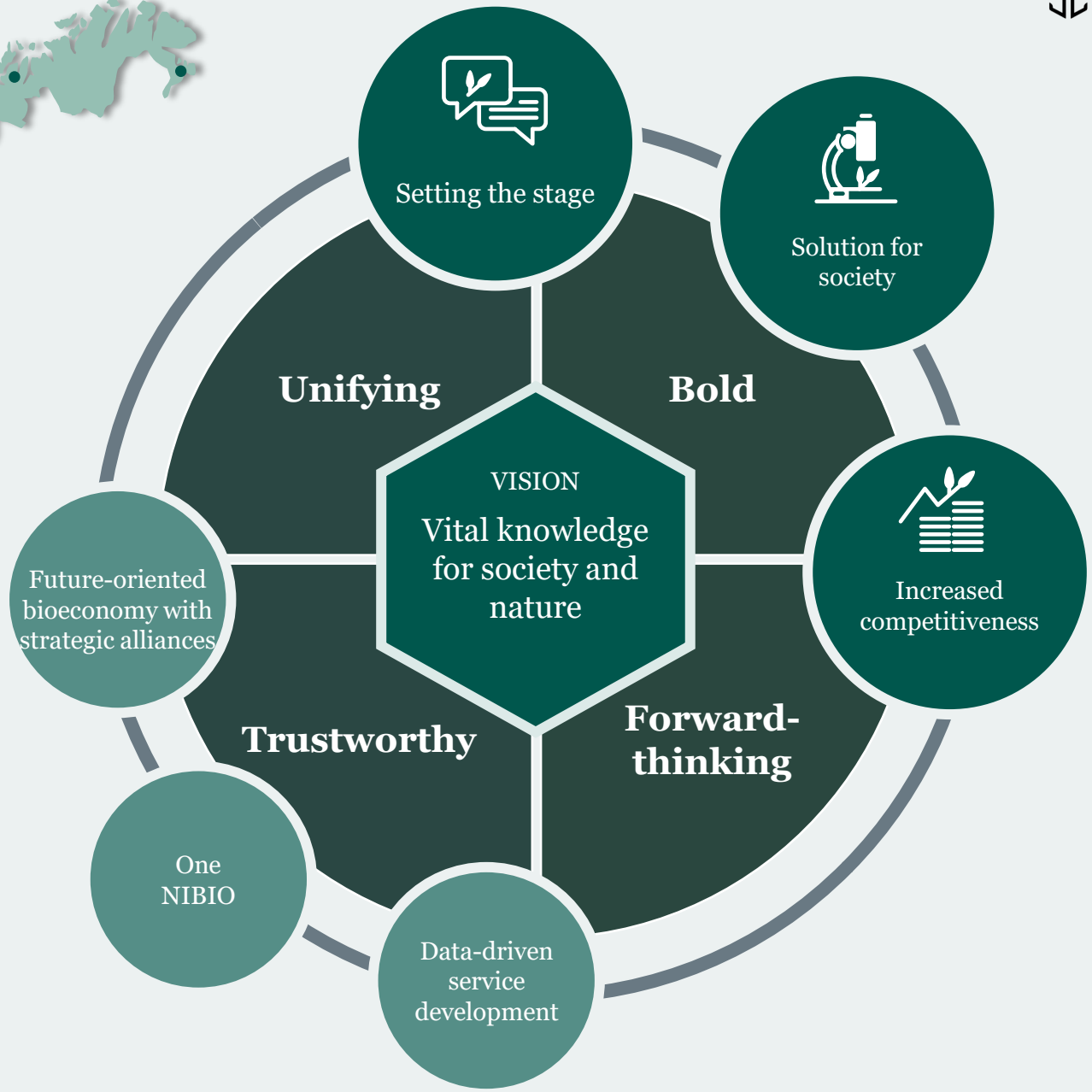


188
MNOK
Assignment revenues

1600
Projects in total

650
Yearly publications

38
Horizon Europe projects



NIBIO's organization

139
Food Production and Society

128
Forest and Forest Resources

112
Environment and Natural Resources

107
Biotechnology and Plant Health

99
Survey and Statistics

125
Corporate governance

23
Finance

12
Communications

5
Research



Photo: Ivar H. Kristensen, NIBIO

NIBIO – Knowledge about the Forest in Norway





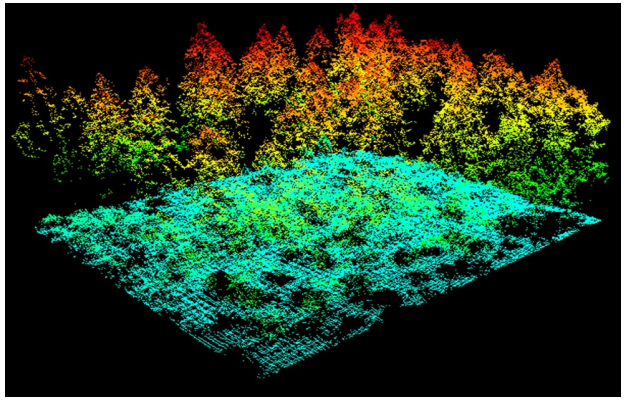
- Wood technology, service life, circular use of wood
- Forest production, technology and management engineering
- Carbon in forest soil
- Forest and climate
- National forest inventory
- Forest mapping and planning
- Forest management
- Forest damage
- Biodiversity
- Forest ecology
- Forest genetics







- Climate change/adaptation
- Circularity
- Precision forestry
- Efficient production
- Decision support
- Reporting national/international



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Forest area in Norway

Forest Coverage and Distribution

Forests cover about 37-38% of Norway's land, mainly in inland and lowland areas

Economic Importance

Norwegian forests supply raw materials for timber, pulp, paper and bio-base products, supporting rural jobs and economy

Environmental and Biodiversity Role

Forests provide habitats for numerous species, including red-listed ones, supporting biodiversity in diverse forest types.

Social and Climate Significance

Forests are vital for recreation, cultural traditions, and act as carbon sinks crucial to Norway's climate strategy.



Foto Dan Aamlid, NIBIO

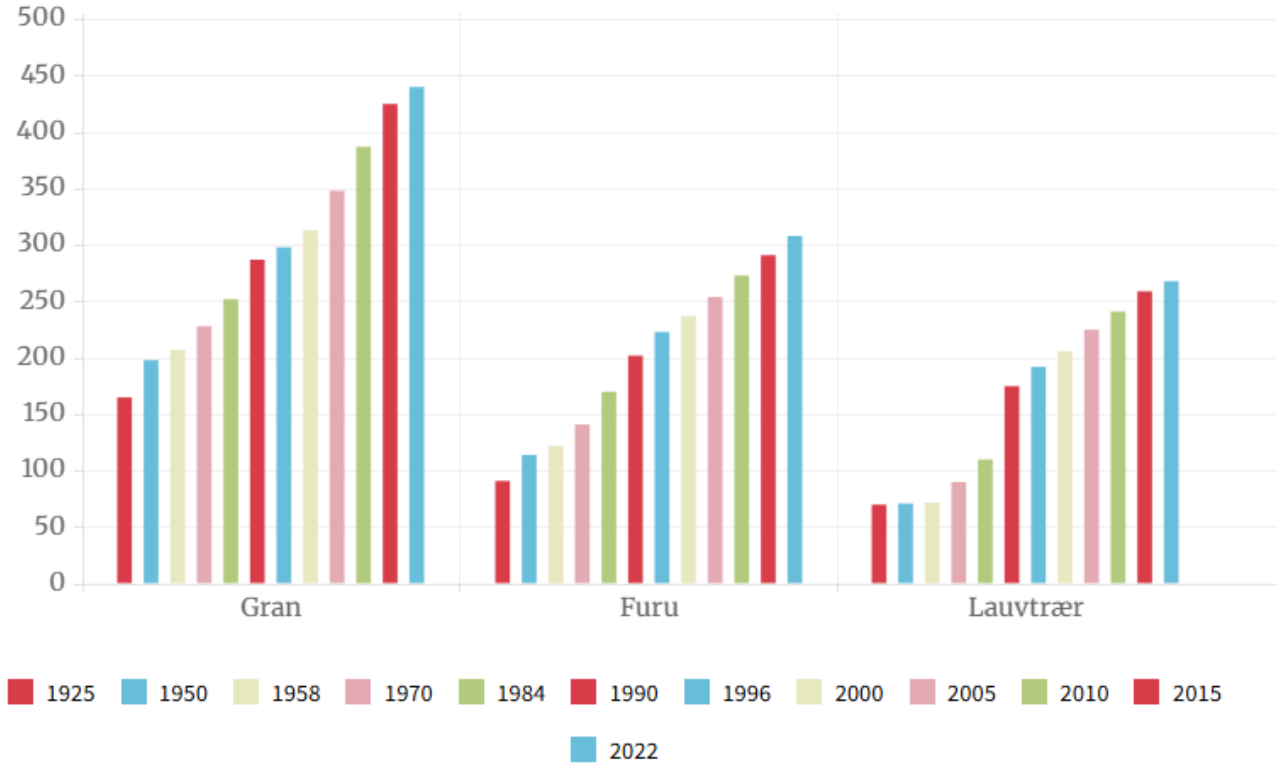
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Growing Stock and Long-Term Forest Development

Spruce – pine and broadleaves

1925 - 2022

FIGUR 1: STÅENDE VOLUM UTEN BARK



Stående volum uten bark i Norge i perioden 1925–2022 oppgitt i millioner kubikkmeter, målt på trær med diameter i brysthøyde større enn 5 cm. Kilde: Landsskogtakseringen



Foto Lars Dalen, NIBIO

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Tree Species Composition of Norwegian Forests

Dominant Tree Species

Norway spruce dominates 44% of the growing stock, mainly in eastern and central Norway.

Scots Pine Distribution

Scots pine makes up 31% of stock, thriving in poorer soils across inland and northern regions.

Broadleaved Tree Importance

Broadleaved species like birch represent 25%, supporting biodiversity especially in coastal forests.

Forest Diversity and Resilience

Diverse species composition enhances forest resilience to climate, pests, and weather extremes.

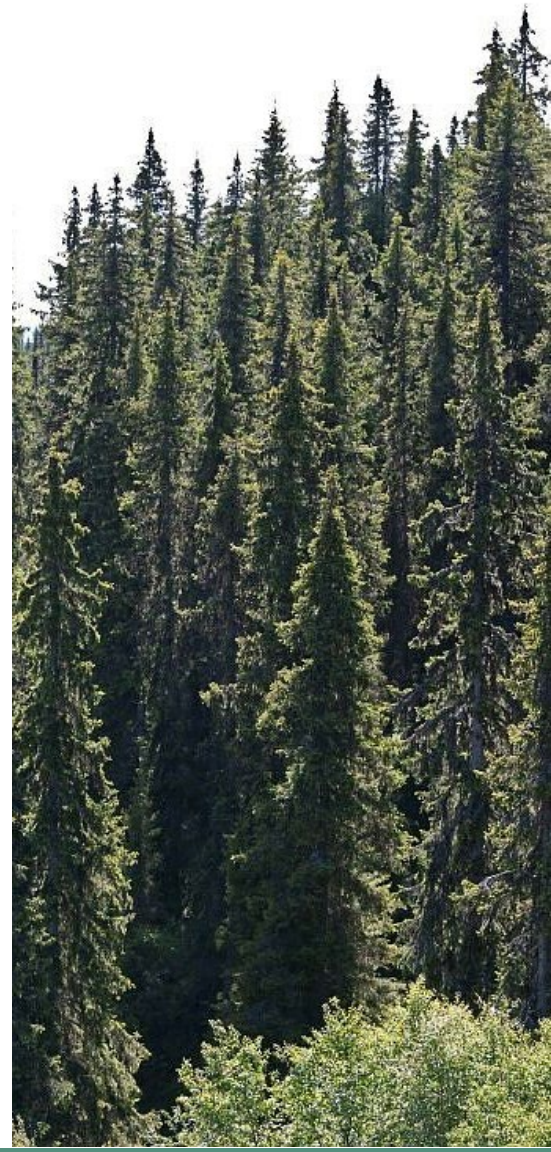


Foto John Larsson, NIBIO

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Logging: spruce (red), pine (blue), broadleaves (grey)

FIGUR 1: AVVIRKNING AV INDUSTRIVIRKE FOR SALG

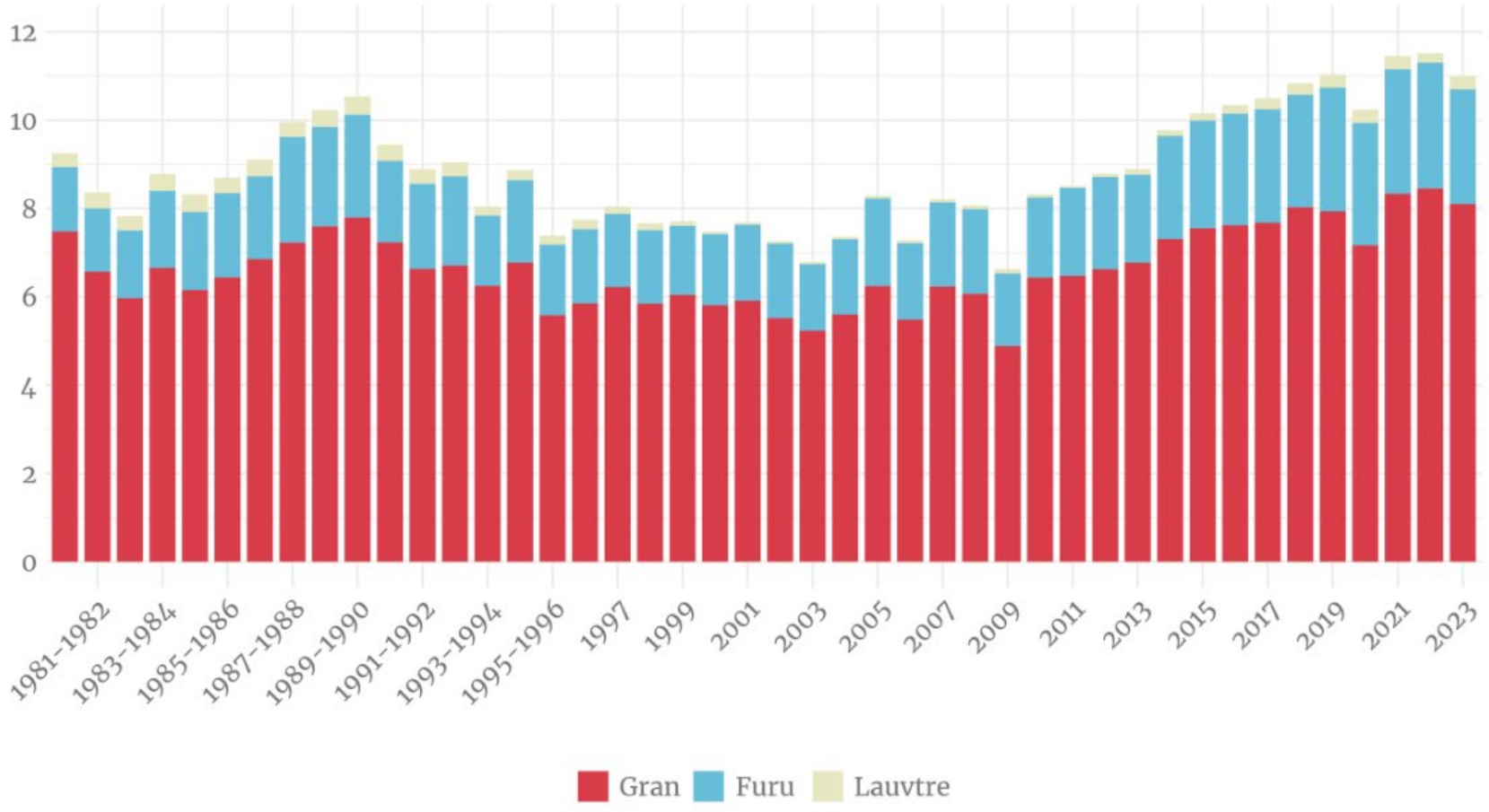




Foto Leif Kjøstelsen, NIBIO

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~50 mill seedlings planted yearly



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Forest seedlings from 1942-2010

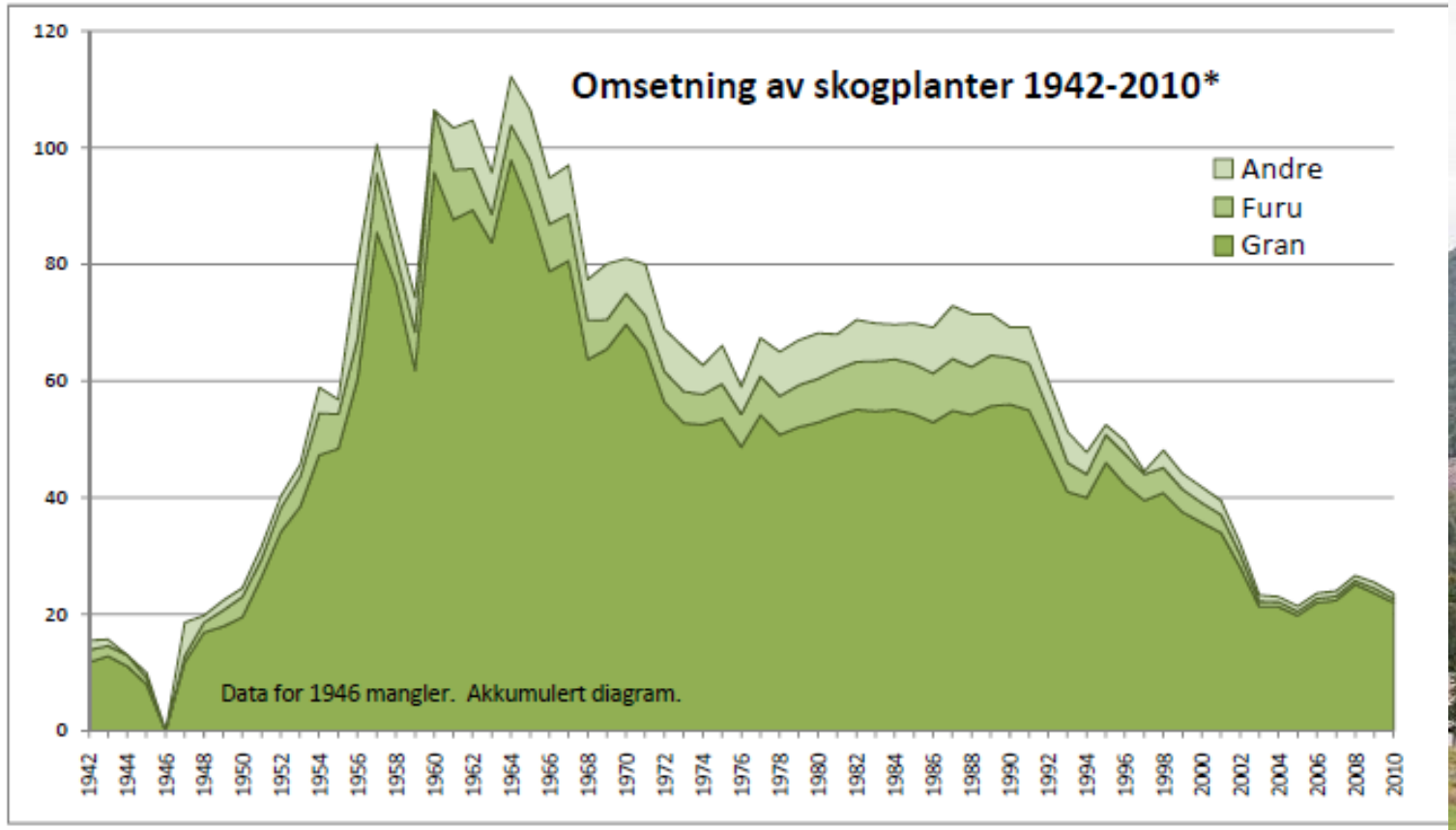
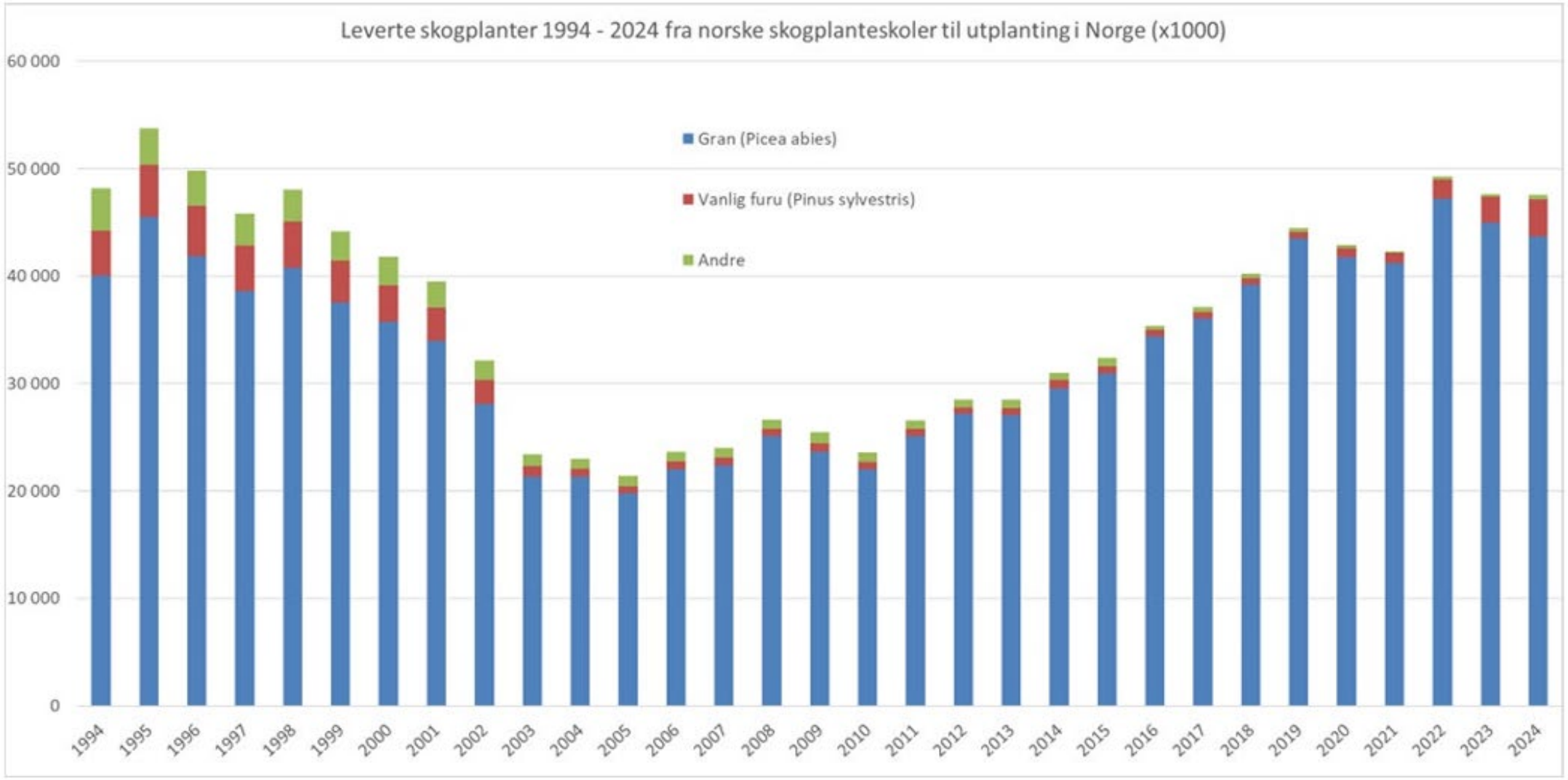


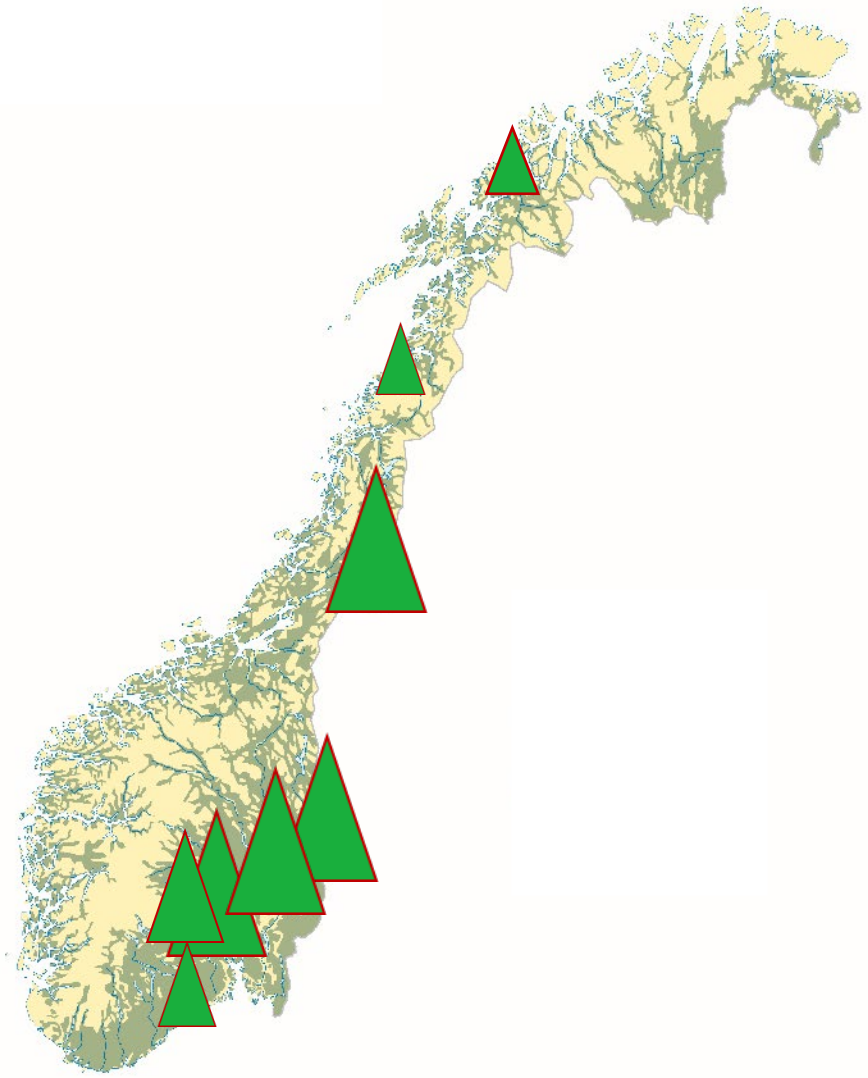


Foto John Larsson, NIBIO

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Seedling delivery 1994-2024 – in 2025 48.5 mill spruce & 4 mill pine





Production of forest seedlings in Norway



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From seed to seedlings











Containers

- M95; 791s /m^2 - rootvolume 50 cm^3
- SA121; 816s /m^2 - rootvolume 54 cm^3

- M60; 500 s/m^2 rootvolume 75 cm^3
- SA100 676 s/m^2 rootvolume 81 cm^3



Regulation given by the Ministry of Agriculture

(*Forskrift om skogfrø og skogplanter)*
fastsatt 20.12.94, rev 1.3.96

§ 1 To ensure seedlings of good quality and gentic diversity in forests

§ 2 All plants for forestry or christmas tree production

§ 3 Guidelines may be given

§ 5 Trade description

§ 6 Plant material should be adapted to the lokal climate (provenances)







Sorting og packing of seedlings before winter storage (-2°C)



Collaboration between NIBIO and the Norwegian forest nursery association with support from the Ministry of agriculture and food



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Pine weevil



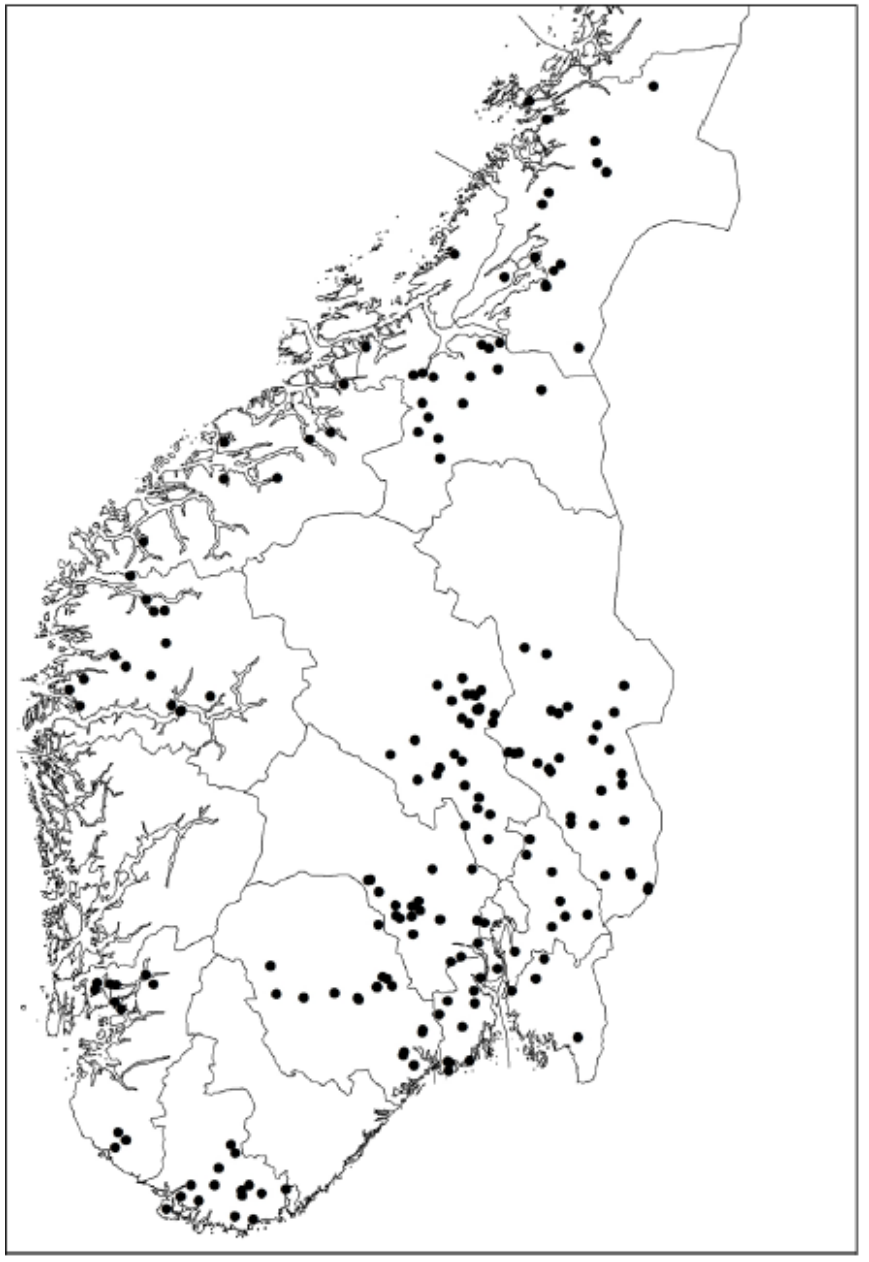


Foto: Erling Fløistad/NIBIO

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Pine weevil protection

Kjemisk



Belegg på planten

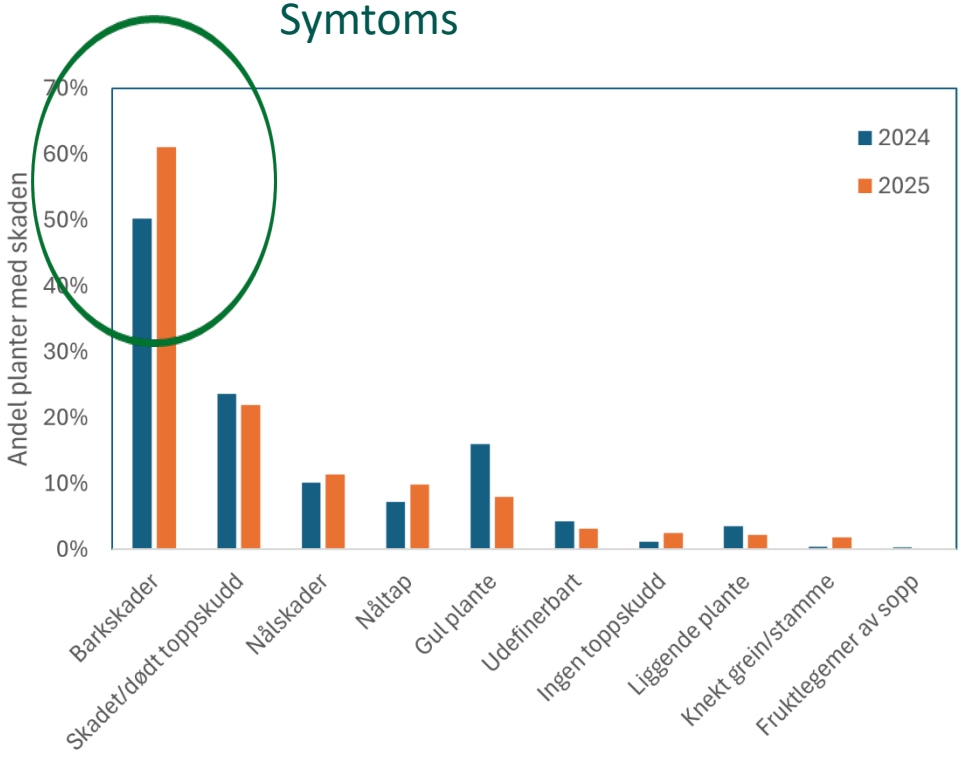


Mekanisk barriere



ForGran - survey on seedling survival 2024- 2028

Symtoms



Nr 1: Bark damages

2024: 681 planter
2025: 1534 planter

Cause of damage /dead seedlings



Nr 1: Pine weevil

Tree species adapted to future climate

Tabell 4. Aktuelle industritreslag (nettoliste) for norsk skogbruk fordelt på to kategorier: prioriterte treslag hvor foreligger grundig dokumentasjon for klimatilpasning og industritrekvaliteter (uthevet), og treslag hvor det er behov mer dokumentasjon av klimatilpasning, kvalitet, motstandsdyktighet mot skadegjørere og patogener etc., under nor forhold.

	Innlandskogbruk	Kystskogbruk
Erstatningstreslag for gran og furu (stort volum)	**Douglasgran** **Europalerk** **Sibirlerk** **Vrifuru** Engelmannsgran	**Sitkagran** **Lutzgran** **Edelgran** **Hybridlerk** **Douglasgran**
Utfyllingstreslag	**Eik** Bøk Spisslønn **Osp** **Svartor** **Hengebjørk**	Bøk **Eik** Svartor Platanlønn Kjempepoppel Kjempeedelgran Vestamerikansk hemlokk Dunbjørk



Knowledge from old breeding experiments and seed sources in Norway





Strategy for breeding and seed production 2010–2040

«Skogbruket vil også etterspørre treslag som betraktes som fremmede i Norge, som ***sitkagran, lutzgran, douglas, kontortafuru, flere arter av lerk og platanlonn****. Bruken av disse er i dag sterkt begrenset av forskrift og sertifiseringskrav. En omfattende endring i klima kan både gi store utfordringer for innenlandske treslag, spesielt gran, og skape et temperert klima der treslag som europalerk, platanlonn og vanlig edelgran naturlig horer hjemme. Disse treslagene kan bli mer aktuelle dersom konsekvensene av klimaendringene blir svart negative for vare innenlandske treslag. Dette er treslag som naturlig vil vandre nordover og etablere seg i Norge over tid.»*

……

«For andre treslag, der det tidligere har vart foredlingsaktivitet, skal frøplantasjer, klonarkiver, avkom- og proveniensforsøk ***tas vare på slik at vi kan fortsette frøproduksjonen*** *og bruke materialene til fremtidig forskning og foredling. Det gjelder treslagene* ***sitka- og lutzgran, engelmannsgran, kontortafuru, sibirlerk og nobeledelgran.»***

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Collaboration and knowledge exchange



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Thank you!







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