The Danish Forest Sector

by Mikkel Brings Nielsen

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Talk About:

- Denmark in General
- Forest Sector
  - Production
  - Resources
  - Ownership
- Legislation
- Recent Issues in the Forestry sector

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Denmark in General

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Geography

- Total Land Area:
  - 42394 km2=16397 mi2
  - Capital is Copenhagen
  - Consists of 406 islands. 78 populated
  - Coastline 7314 km (4571 mi)

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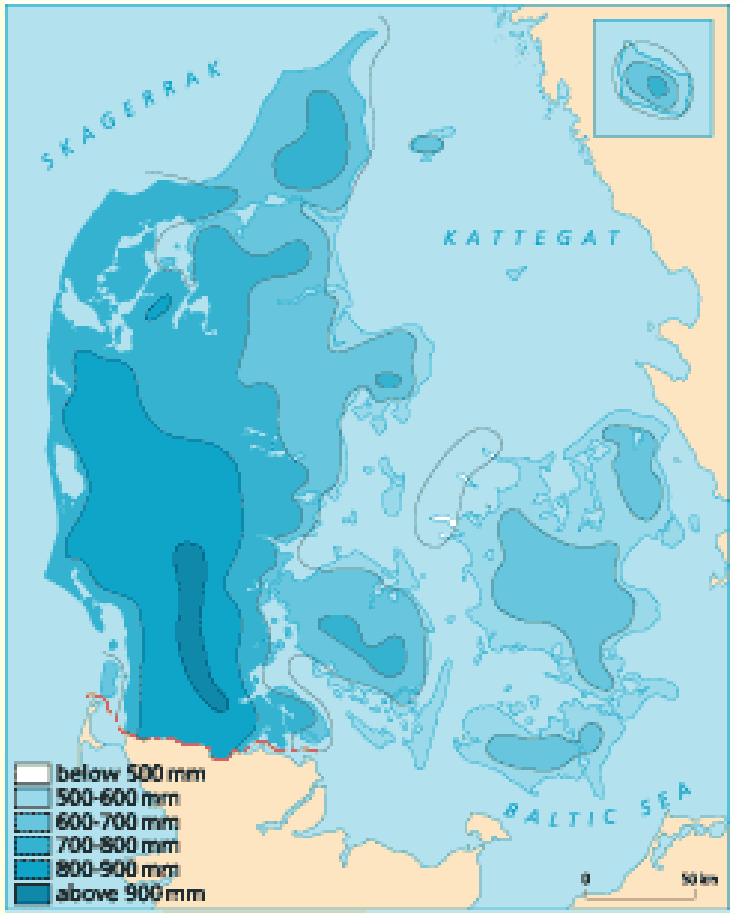
Climate

- Temperate climate zone
- Cool summers (mean of 16 C/60F) and windy, warm winters (mean of 0.5 C/ 32F)
- Get hit by storms on a regular basis during fall and winter



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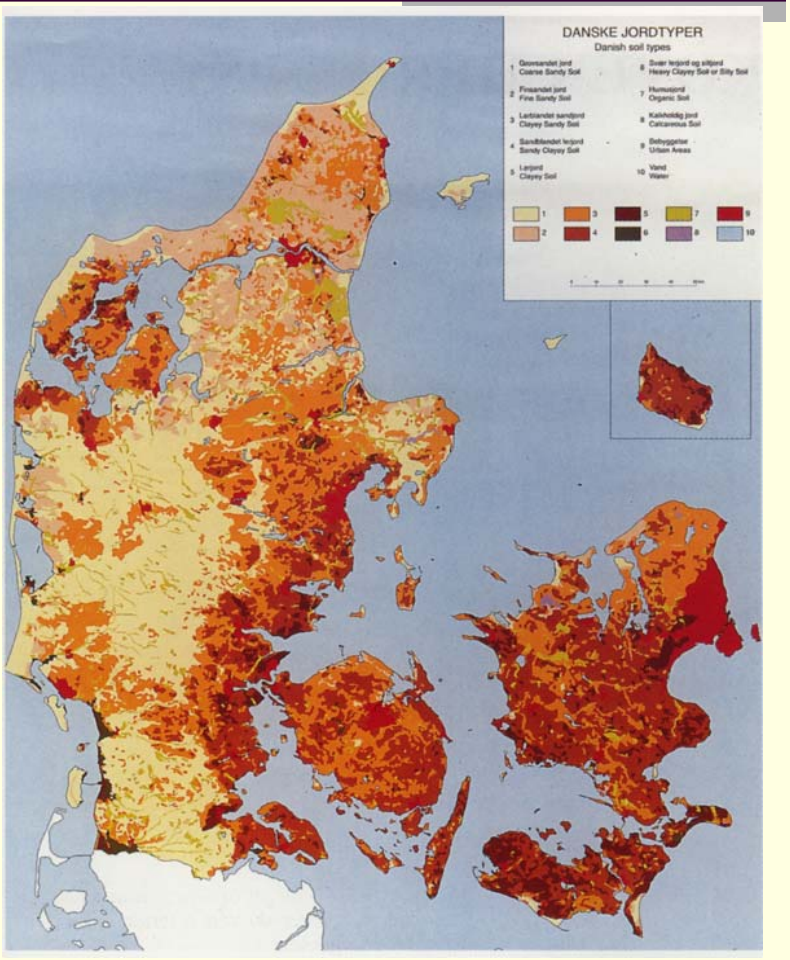
Landscape

- The Danish landscape was formed during the Weichselian ice age over 12,000 years ago.
- When the ice withdrew around 10.000 b.c. glacial deposits on the Danish islands were left behind.
- Denmark was divided into two different main categories of soil types
  - The sandy and nutrient poor soils of Western Jutland created by the glacial runoff
  - The nutrient rich sandy clay soils of eastern Denmark
- The landscape as it is seen today is low and flat with gently rolling plains
  - Highest point 173 m (576 feet)



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Comparison

Denmark

Population: 5.35 million

Largest City: Copenhagen (1.8 million)

Land Area: 42,394 km2 (11.2 % forested)

Latitude: 54-58 north

GDP: US$ 162 billion

GDP per capita: US$ 32,183

Annual Growth (%change 2003-2004): -1

Inflation: 1.4 %

Major Industries: Agricultural products, grains, meat and dairy, fish, beer, oil and gas, home electronics and furniture.

Major Trading Partners: EU (esp. Germany, Sweden, UK, Netherlands, France and Italy), USA

Oregon

Population: 3.5 million

Largest City: Portland (1.7 million)

Land Area: 251,418 km2 (45 % forested)

Latitude: 42-46 north

GDP: US$ 73 billion

GDP per capita: US$ 28,000

Annual Growth (%change 2003-2004): (US) 3.3%

Inflation: (US) 2.3%

Major Industries: High Technology, Forestry, Tourism, Agriculture, Food processing

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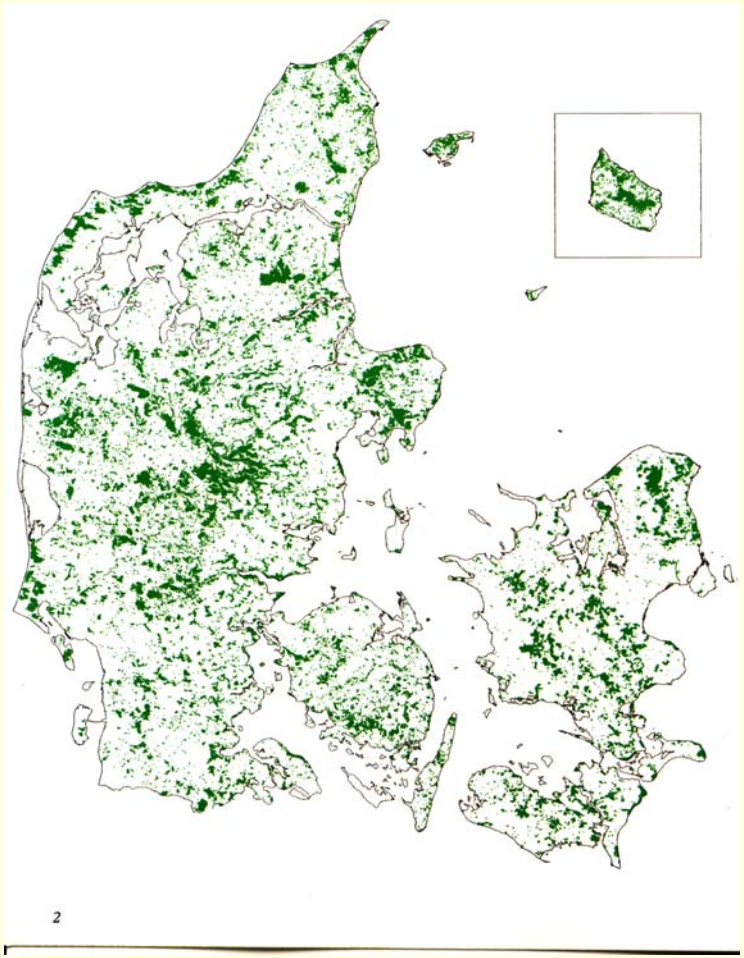
Forest Resources



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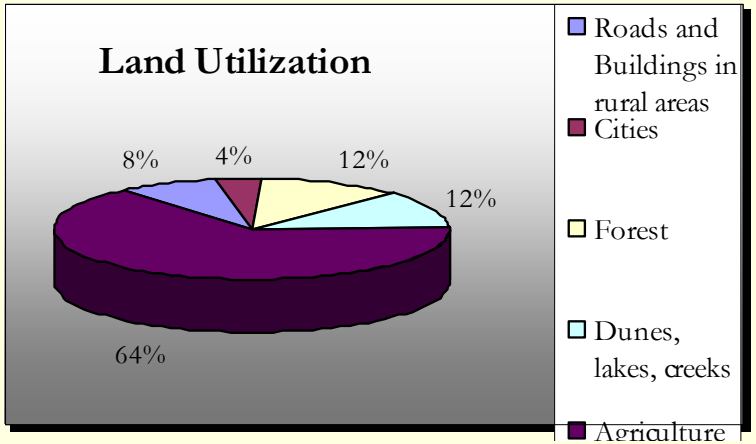
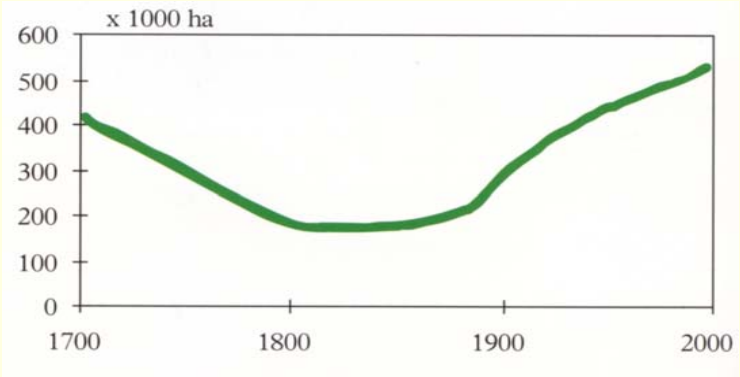
Resource Base

- Denmark an agricultural superpower in Europe
- 486,000 ha covered today (12% of DK total area)
- A historical low level of 2% forest coverage in 1800





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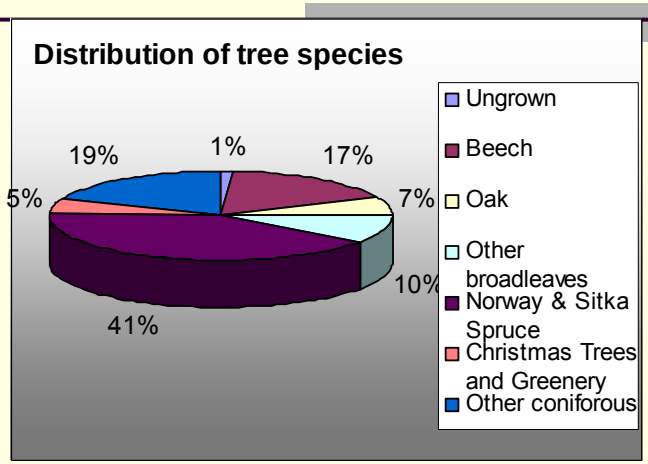
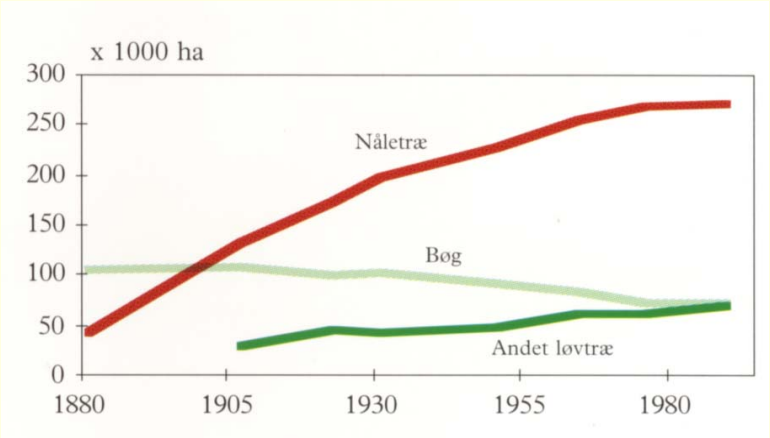
Tree Distribution

Species

- 43% broadleaves.
  - Mainly beech, oak and birch
- 57% conifers
  - Norway Spruce, Sitka Spruce, Douglas fir, Scotch Pine
- Christmas trees and greenery
- The percentage of conifers has increased dramatically the past 150 years





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Production

- Total volume of growing stock is 55 million m3
- Mean Annual Increment (MAI) 3.2 mill m3/yr
- Annual cut averaging 2 mill m3/yr
- Wood demand is 7 mill m3/yr

	Rotation age	production m3/ha	Forest cover
Beech	100-130	9	17%
Oak	120-150	6	7%
Norway Spruce	50-80	12	33%
Sitka Spruce	50-70	13	8%

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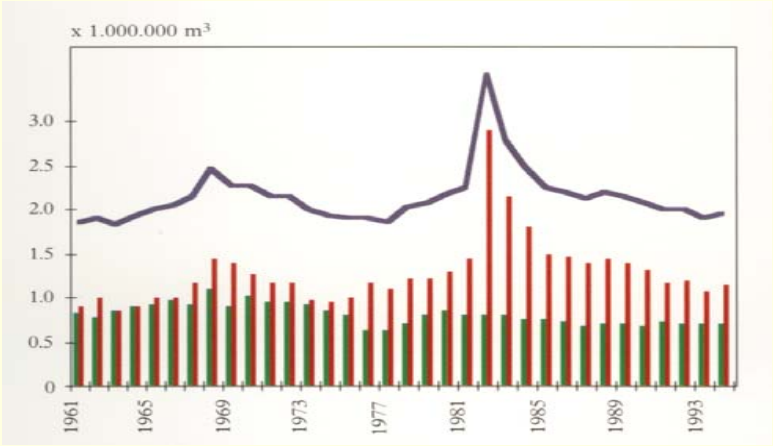
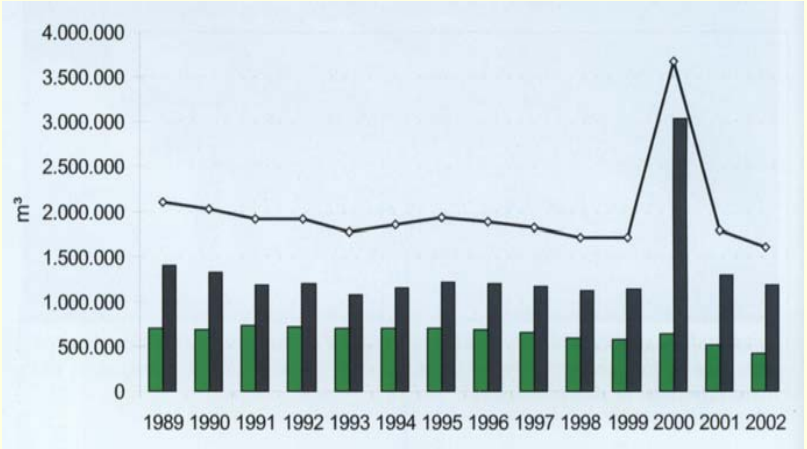
Production (II)





- Blue= total yield
- Red=conifers
- Green=broadleaves

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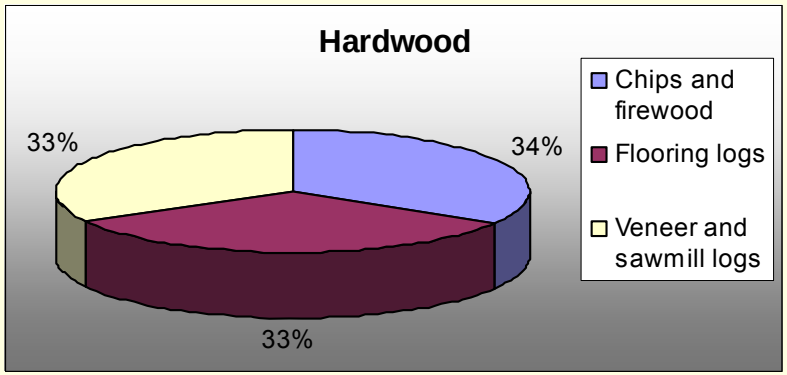
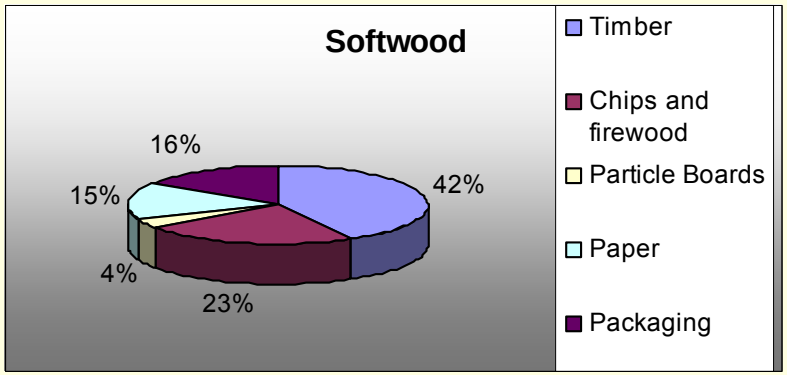
Use of Wood Production





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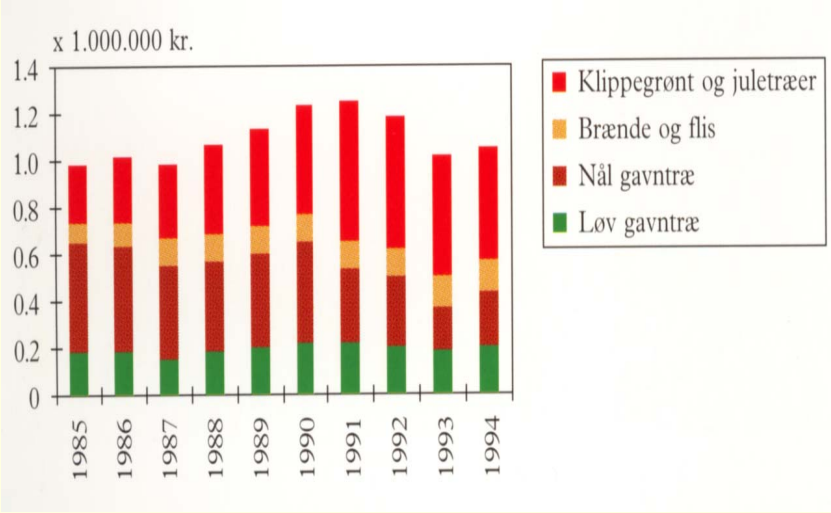
Value of Production

- Roughly 1,1 billion DKK/yr (180 mill. USD)
- 0.1% of GDP
- Christmas trees and greenery is produced on 5% of the forest area and typically produces about 30% of the forest property's gross sales
- Employment in the forestry sector (not industry) is declining



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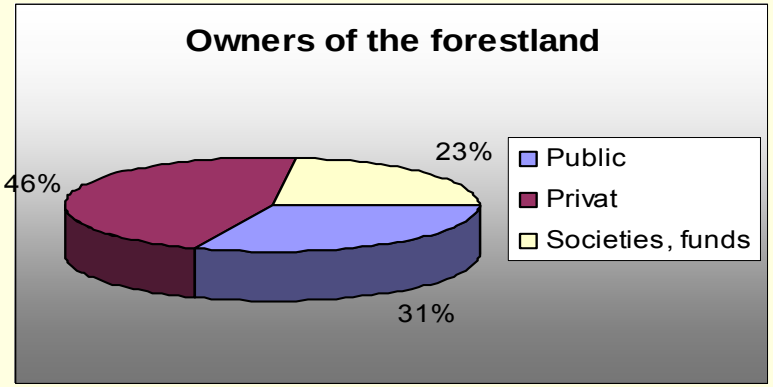
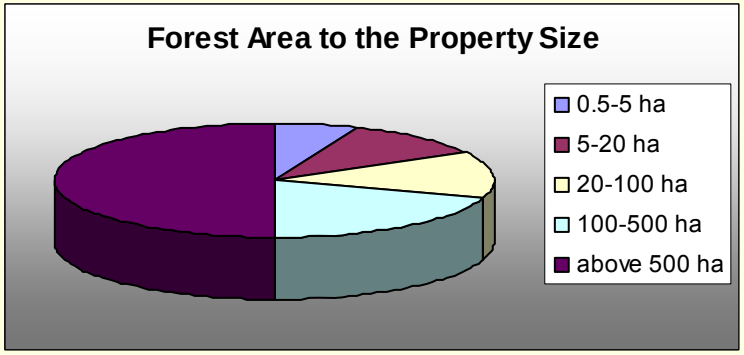
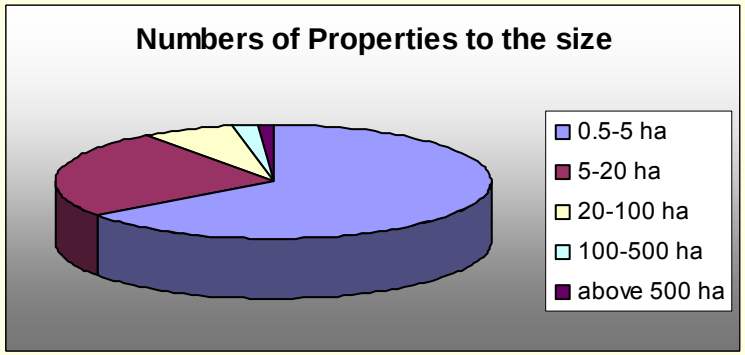
Owners

- Owners of the forestland
- Forest area to the property size
- Numbers of properties to the size







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Forest Legislation

- Forest managers of public and private forests is operating within these laws:
- The Danish Forest Legislation (1989)
  - Applies to private and public land
  - The purpose of the Act is:
  1. to conserve and protect Danish forests,
  2. to improve the stability, structure of ownership and productivity of forestry,
  3. to contribute to increasing the total forest area, and
  4. to strengthen advisory and information activities concerning good and multiple-use forest management.

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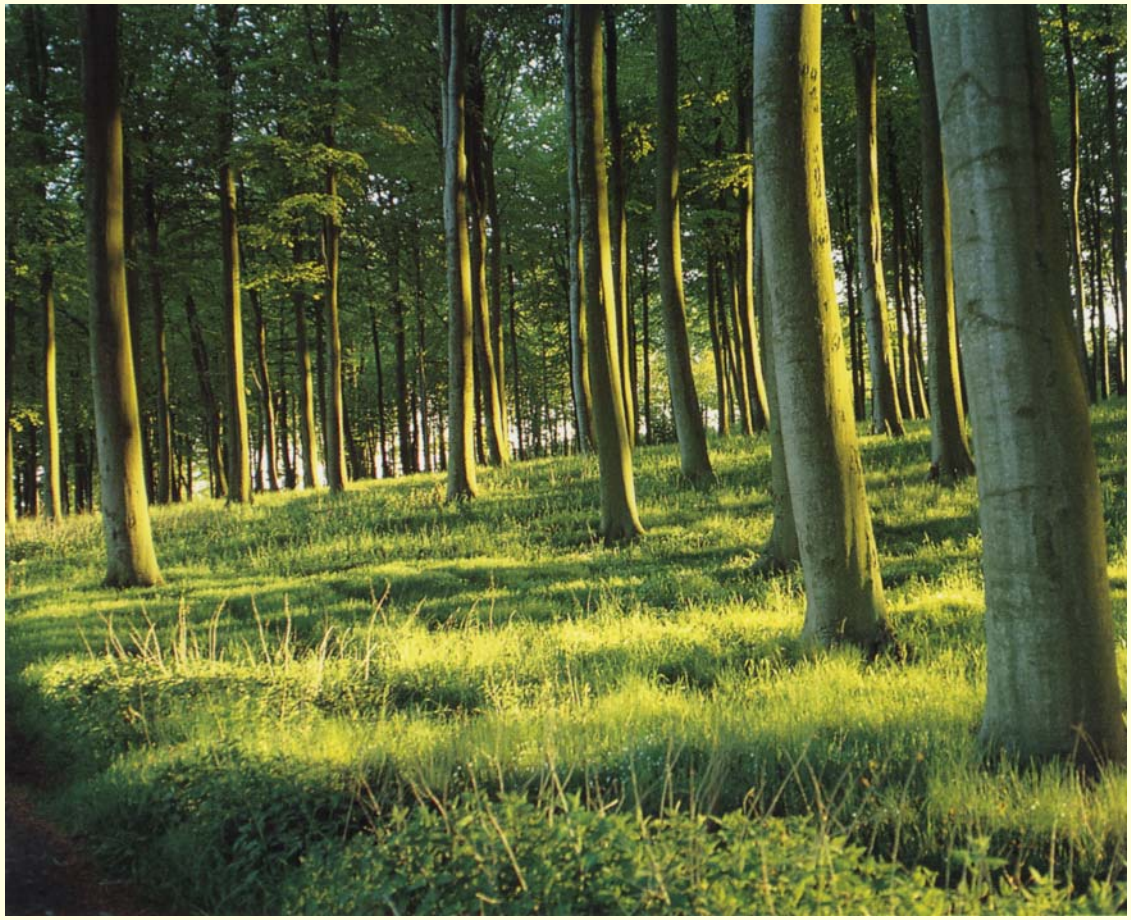
A National Symbol



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Current Issues

- When I came here I went to a convention about the profitability of plantation forestry in the PNW
- In Denmark we have practiced plantation forestry for over 250 years
- So now we are asking

Is plantation forestry economical, ecological and social sustainable?

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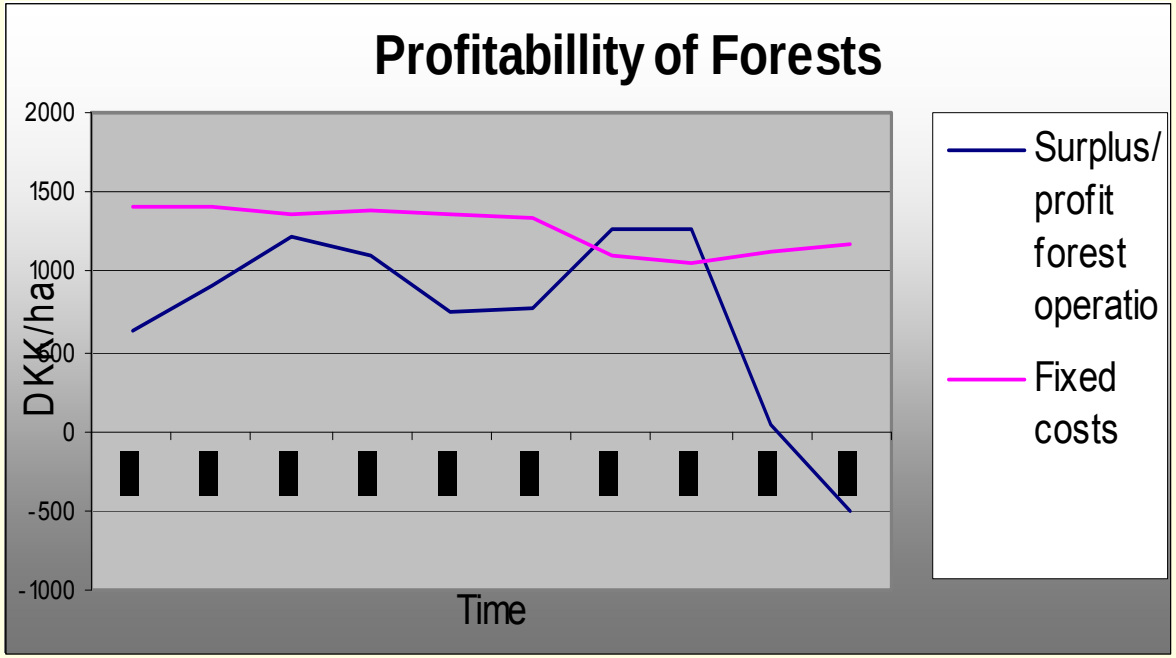
Economical Sustainable?

- Blow down 1999
- Drop in yield in 2002
- New markets hard to compete against.
- Variable and fixed costs are too high
- Resource base too small
- Profit negative in 2002



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Taxation

	Sweden	Finland	Norway	Denmark
Capital levy, wealth tax	minus	0,9%, based on income valuation	1,5% of the forest profit	0%
Tax on real property	0%	0%	0% for skovbrug	1,6 - 2,2% from 2001
Tax on profit	27%	0%	0% if forest in possession > 10 years	50% of calculated profit

- Forestry is not economically sustainable in Denmark

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Ecological Sustainable?

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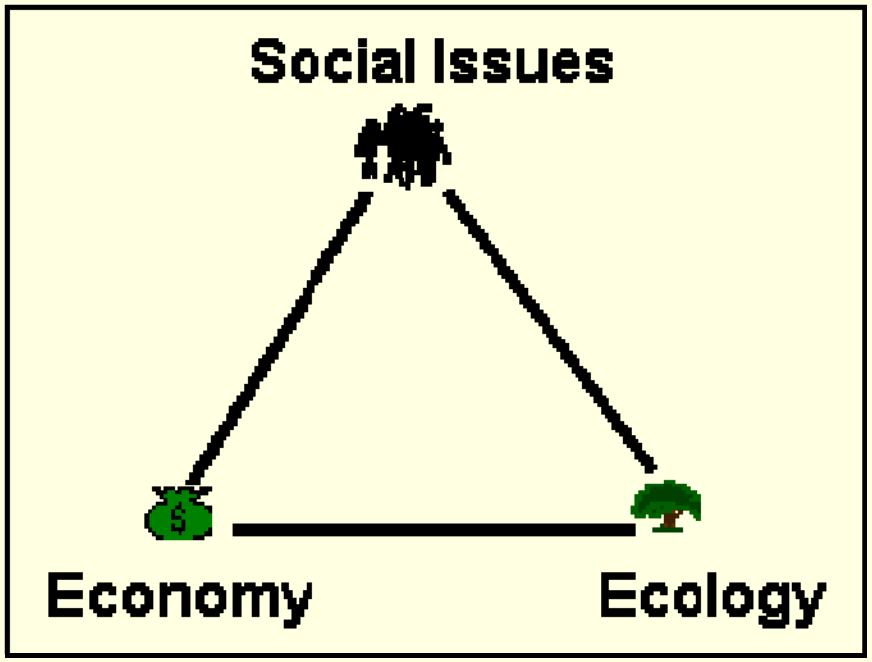
Social Sustainable?

- Result: Not economical feasible. Ecological not the best.
- Social sustainable?
- We have to find a way to grow our forests that takes this into account:
  - Ecology
  - Economy
  - Wind
  - Future market changes



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"Near Natural" Silvicultural System

- From plantation forestry to "near natural" silvicultural systems
- In principle the goal is to imitate the processes of nature
  - Natural succession between species
  - Natural regeneration
  - Multiple species
  - Continuous canopy cover
  - Multiple stories
- The tasks for future silviculturalists is to control nature
  - Introducing goal-diameter cutting
  - The goal is to make use of natural tending, thinning, pruning mechanisms
- Result: Income evenly distributed over the rotation

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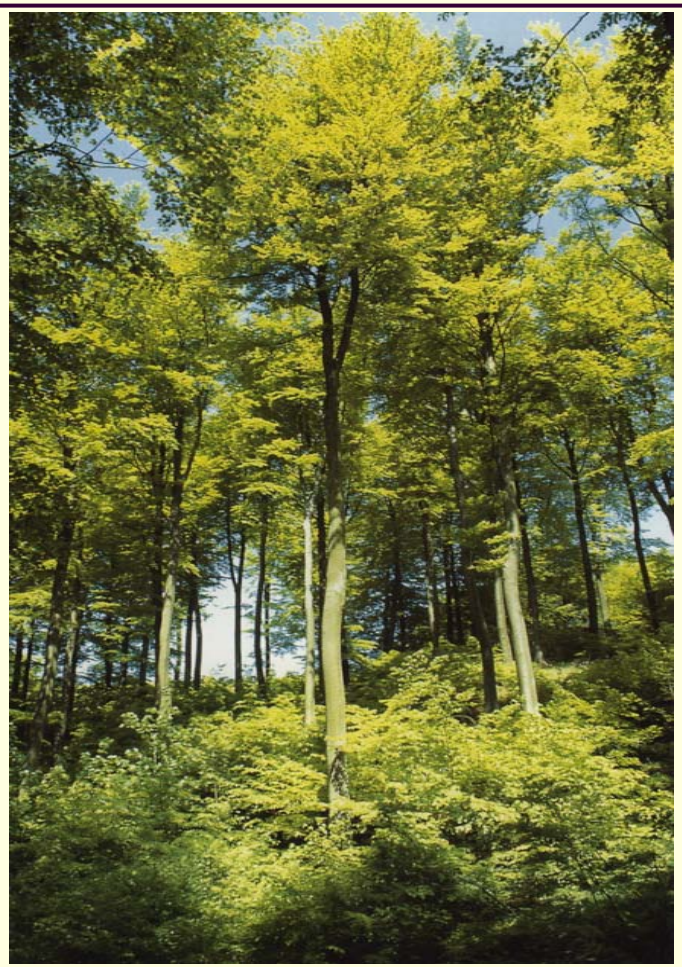
Multi storied forests



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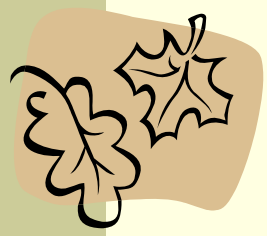

- We manage for natural values, aesthetics
- It makes sense in the long run
  - Economical: Reduce regeneration costs, site prep, etc
  - Ecological: Constant forest cover, no catastrophic disturbances, less chemical treatment
  - Social acceptable????
- This complies with the goal of sustainability, long-term planning, low risk, financial returns

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Challenges

- The challenge is to convert even aged stands to multiple stories and still get some kind of return from the forest during the conversion stage.
- To educate people along the way
- Management intensive
- Conservatism within the sector

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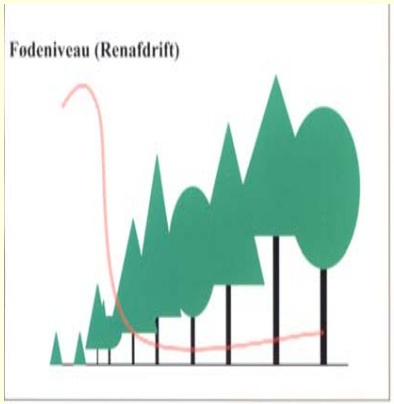
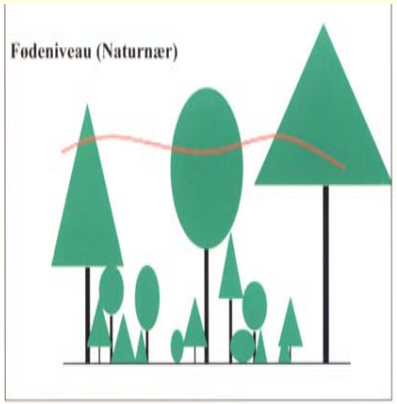
Pros

- Cost reducing
- Ecological more sound
- Wind blow stable
- Evenly distributed income, wood extraction levels etc
- Enhanced flexibility
- Different kinds of products (niche markets)



Figur 1. Principiel sammenhæng mellem skovstruktur og fødeudbud i en skov drevet i renafdriftssystem (rød streg angiver fødeniveau).



Figur 2. Principiel sammenhæng mellem skovstruktur og fødeudbud i en skov drevet efter naturnære principper (rød streg angiver fødeniveau).

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