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
Denmark in General
Geography

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

<table>
<thead>
<tr>
<th>Species</th>
<th>Rotation age</th>
<th>Production m³/ha</th>
<th>Forest cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beech</td>
<td>100-130</td>
<td>9</td>
<td>17%</td>
</tr>
<tr>
<td>Oak</td>
<td>120-150</td>
<td>6</td>
<td>7%</td>
</tr>
<tr>
<td>Norway Spruce</td>
<td>50-80</td>
<td>12</td>
<td>33%</td>
</tr>
<tr>
<td>Sitka Spruce</td>
<td>50-70</td>
<td>13</td>
<td>8%</td>
</tr>
</tbody>
</table>

World Forest Institute  http://wfi.worldforestry.org
Production (II)

- **Blue** = total yield
- **Red** = conifers
- **Green** = broadleaves
Use of Wood Production

**Hardwood**
- Chips and firewood: 33%
- Flooring logs: 34%
- Veneer and sawmill logs: 33%

**Softwood**
- Chips and firewood: 16%
- Flooring logs: 23%
- Timber: 42%
- Particle Boards: 15%
- Paper: 4%
- Packaging: 4%
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

Owners of the forestland

- Public: 31%
- Privat: 46%
- Societies, funds: 23%

Forest Area to the Property Size

- 0.5-5 ha
- 5-20 ha
- 20-100 ha
- 100-500 ha
- above 500 ha

Numbers of Properties to the size

- 0.5-5 ha
- 5-20 ha
- 20-100 ha
- 100-500 ha
- above 500 ha
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.
A National Symbol
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?
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
## Taxation

<table>
<thead>
<tr>
<th></th>
<th>Sweden</th>
<th>Finland</th>
<th>Norway</th>
<th>Denmark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital levy, wealth tax</td>
<td>minus</td>
<td>0,9%, based on income valuation</td>
<td>1,5% of the forest profit</td>
<td>0%</td>
</tr>
<tr>
<td>Tax on real property</td>
<td>0%</td>
<td>0%</td>
<td>0% for skovbrug</td>
<td>1,6 - 2,2% from 2001</td>
</tr>
<tr>
<td>Tax on profit</td>
<td>27%</td>
<td>0%</td>
<td>0% if forest in possession &gt; 10 years</td>
<td>50% of calculated profit</td>
</tr>
</tbody>
</table>

- Forestry is not economically sustainable in Denmark
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
“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
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
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
Pros

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