

Evaluating Financing of Forestry in Europe (EFFE) Country report - Norway

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INA fagrapport 8

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2007



Forord

Denne rapporten er en del av EU-prosjektet *Evaluating Financing of Forestry in Europe* (EFFE), som ble avsluttet i januar 2005. Gjennom tildeling 150837/i10 fra Norges Forskningsråd (NFR) har INA/UMB deltatt i prosjektet som ”assistant contractor“. EFFE har hatt som formål å undersøke hvordan finansiering av virkemidler i skogbrukssektoren (primærskogbruket) håndteres i forskjellige europeiske land, ved å blant annet bygge en ”up-to-date”-database som viser den totale skogbruksstøtten som gis i ulike land i Europa, fordelingen av støtten på ulike typer virkemidler samt analysere virkemidlenes effektivitet og fordelingseffekter. Progresjon og resultater i prosjektet har fortløpende blitt publisert på prosjektets internettsider (<http://www.efi.fi/projects/effe/>).

INA/UMB sitt bidrag inn i prosjektet har vært å skaffe til veie informasjon om offentlige finansiering av skogbruksvirksomhet i Norge, og er dokumentert i denne rapporten og som egen rapport i EFFE. Videre vil data samlet inn av hovedprosjektet dokumenteres i en database på internettsidene til prosjektet (den er foreløpig ikke offentliggjort).

Prosjektet har i Norge samlet inn et omfattende datamateriale med informasjon om virkemiddelbruk helt ned på skogeiernivå. Hovedkilde til disse dataene er Skogavgiftsdatabasen, som forvaltes av Statens landbruksforvaltning. Det foreliggende materialet er av et slikt omfang og har en slik detaljgrad at det åpner for vurderinger og analyser det tidligere ikke har vært mulig å gjennomføre i Norge. Foruten å bidra til en dokumentasjon av offentlig økonomisk virkemiddelbruk i skogbrukssektoren i Norge, har deltagelsen i EFFE og denne rapporten gitt et meget godt grunnlag for videre arbeid i NFR-prosjektet *Analyse av virkemidler i norsk skogpolitikk*, som vil gå ved INA fram til 2007.

Professor Birger Solberg har vært prosjektleder og Even Bergseng har fungert som utøvende forsker på prosjektet. Bergseng er også ansatt som stipendiat på prosjektet *Analyse av virkemidler i norsk skogpolitikk*.

Vi takker NFR for finansiering av prosjektet, seniorrådgiver Per Gulbrand Solli i Statens Landbruksforvaltning for utlevering av data og Roar Kjær ved Fylkemannens landbruksavdeling i Hedmark for uvurderlig hjelp i arbeidet med databasen.

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Summary

The context

The natural and socio-economic context

Norway is situated in the boreal coniferous vegetation zone, with Norwegian mainland stretching from 57° to 71°'s latitude. A large part of the country is thus north of the polar circle and temperature is to a large extent the limiting factor of forest growth. Topography is varied: 32% of the land area is below 300 meters above sea level, and 20% of the land area is situated above 900 meters above sea level.

Three species are important in commercial exploitation of forests: Norway spruce (*Picea abies* (L.) Karst), Scots pine (*Pinus silvestris* L.) and birch (*Betula pubescens* and *pendula*).

Norway has a strong tradition for statistics on natural resources. A national inventory of forests (the National Forest Inventory, NFI) is carried out with a 5 to 10 year cycle, the first performed in the period 1919-30 and the latest in 1994-98. In 1986 a set of permanent sample plots were established. In total there are 16 000 sample plots, with about 10 500 situated on productive forest land and other wooded land below the coniferous forest limit¹.

The productive² forest area in Norway is approximately 74 020 km² (~27% of total land area). Non-productive forest areas and wooded mires covers respectively 17 300 (6%) and 6 030 km² (2%), while open mire covers 7 630 km².

Norwegian forest resources have increased substantially the last 80 years surveyed by the National Forest Inventory, and the standing stock has increased for all three forest species during this period. Standing stock (including bark) on productive forest land is estimated to 716.3 million m³. The standing stock holds 46% Norway spruce (*Picea abies* (L.) Karst), 32% Scots pine (*Pinus silvestris* L.) and 22% deciduous trees (mainly birch species: *Betula pubescens* and *pendula*). The yearly net increment is estimated to 21.053 million m³ (excl. bark and harvest waste), with 53% spruce, 25% pine and 22% deciduous tree species. The annual harvest of industrial roundwood has the last decade varied between 8 and 11 mill m³. In addition about 1.5 mill m³ of fuelwood is harvested annually.

Forestry has been important in Norway for a long time. Around the previous millennium change, exploitation of different forest products became organised and commercialised. During the 11th, 12th and 13th century, timber was widely used as a source of energy for production of iron, salt and later tar. Salt was exported to other Nordic countries. Also, timber for shipbuilding became important as a commodity and along with that transportation in itself became an important business. As saw milling and sawing technology developed throughout the 14th and especially the 15th century, sawn wood became a large export commodity to close-by countries like Denmark, Scotland and the Orkneys. Later, during the 16th century, England, northern Germany, the Netherlands and also the countries on the Iberian Peninsula were large buyers of sawnwood. As transport from the Baltic Sea, and thus the other Nordic countries, was expensive, Norway was for many years a dominating supplier of pine and spruce to the West-European lumber and timber markets.

¹ The definition of (coniferous) forest is at least 60 trees pr. hectare that reaches a height of at least 5 meters

² Productive forest has an annual yield of at least 1 m³ wood including bark per hectare.

In 2001, industrial forestry (i.e. the harvest of industrial roundwood and the silviculture operations) constitutes 0.15% of Norway's GDP.

Norway has a strong forest industry, mainly based on lumber, and pulp and paper production. Both are industries with long traditions, and have been important in building and developing the Norwegian economy throughout the 19th century and the beginning of the 20th century. In the last half of the previous century, oil has been dominating in the economy. According to Statistics Norway, the groups "Wood Products" and "Pulp, Paper and Paper Products" constituted 0.76% of GDP in Norway in 2001. In addition, part of the furniture industry is wood based and hence can be viewed as forest industry. During the 1990's, forest industry has been one of our main export industries. Forest industry is spatially scattered, and thus plays an important role for employment in many peripheral communities.

Non-industrial private ownership dominates Norwegian forestry. Of the total of 125 522 forest owners that were registered in 1989, more than 120 000 were so called individual owners. Individual ownership is especially common on the smaller properties. The average forest property is approximately 56 hectares.

The number of owners, both non-industrial private and others, has been fairly stable for the last fifty years, although with a small increase. During the same period, there has been a large increase - by some 15% - in productive forest area. The changes in the number of forest owners is most likely related to splitting of existing properties due to inheritance, while the increase in forest area most likely is due to varying definitions of the upper timber line.

The policy and legal context

Several acts are relevant to the forest sector, and although we have a specific forest act in Norway, other laws have large impacts on forestry. The most important ones are described below.

Forest Act

Forestry is regulated by the Forest Act (Anon., 1965, revised 1976). The purpose of the Forest Act is to "*promote forestry, afforestation and forest protection [...] by means of rational tending to achieve satisfactory results for those engaged in forestry and ensure an efficient and regular supply of raw materials for industry purposes*". Thus, it may seem that most emphasis is put on production of wood. However, the act also states that "*emphasis should be put on forests role as a source for recreation, part of the landscape, environment for animals and plants and arena for hunting and fishing*".

A new act on forestry is under way, and will most likely be approved by the parliament during 2005.

Nature Conservation Act

The law on Nature Conservation (Anon., 1970) affects forestry only indirectly. The act relates to nature conservation in general, like national parks, landscape protection areas, nature reserves etc. However, the law (§2) states that *Any person who is planning major works, construction or activities that will involve substantial changes in the character of the landscape or appreciable damage to the natural environment otherwise shall, before such activities are initiated, submit the matter to the competent authority pursuant to this Act for consideration. If development, construction or other activities will entail damage to the landscape or the natural environment otherwise, measures must be implemented to limit or*

counteract the damage to a reasonable extent. This must be interpreted as including forestry and supports the Forest Acts emphasis on forests as *an important part of the landscape and as an environment for plants and animals* (The Forest Act of 1965, §1). The Nature Conservation Act is the formal basis for protection of large areas of forest, Only to a small extent does the Nature Conservation Act apply to conservation of minor areas like e.g. key biotopes.

Allodial law

For farming or forest properties larger than 2 and 10 hectares respectively, special regulations apply as to inheritance and right of primogeniture (Anon., 1974). In addition to securing inheritance by rights of primogeniture, the Allodial Law imposes a duty to settle down (within 1 year from transfer) and live on the property for a certain period of time (presently 10 years). The heir may also according to the Allodial Law be allowed a discount (approximately 25%) when taking possession of the property. §56 of the Allodial Act states that *the primogeniture inheritor has a claim to a value assessment that is reasonable according to his/her financial situation.* The Act on Tax on Heritage and Gifts, states that for agricultural properties being transferred subject to primogeniture rights, value is set to $\frac{3}{4}$ of assumed market price. Clearly these regulations will affect the property structure as well as the pattern of settlement, and thus have an influence on the forest sector and forestry. There is no purpose stated in the act, but it is evident that the act aims at securing a structure of farms owned and inhabited by those who work the land. Farm forestry is supposed to be a part of this structure.

Land Act

Both private and public land use is regulated by the Land Act (Anon., 1995). The purpose of the Land Act (§1) is to *provide suitable conditions to ensure that the land areas in the country including forests and mountains and everything pertaining thereto (land resources) may be used in the manner that is most beneficial to society and to those working in the agricultural sector.* The Land Acts regulations concern forestry mostly when it comes to restricting the division of properties. The act emphasizes *a property structure and operational solutions that may lead to reductions in costs of operation* (Ministry of Agriculture, 1995).

Concession Act

Sale of land used for agricultural or forest production is regulated by the Concession Act (Anon., 1974). The Concessions Acts' purpose is to *regulate and control the sale of real property in order to achieve effective arrangements to protect areas used in agricultural production and to bring about such ownership and user conditions as are in the best interests of the community at large in order to benefit (i) farming, horticulture and forestry and (ii) the need for land zoned for development purposes.* The act should work for a *socially desirable development in property prices, settlement and operational solutions.* In a white paper from 1999 commenting practise of the Concession Act, a socially desirable development in property prices is understood as a price development that considers *the property as a basis for housing and trade/business,* and that *prices should favour the person who acquires the property.*

This is mainly achieved through regulations of land prices. Calculations of land prices are subject to detailed regulation, and *the value of capitalised yield is seen as the natural basis for valuation of properties* in the agricultural sector (Note from the Ministry of Agriculture). The actual control of prices is accomplished by regulating the interest rate that is used for

capitalisation of future annual yield. The Ministry of Agriculture & Food³ states that *the present exercise of the Land and Concession Acts, and their decrees, leads to market prices on forest properties that to an unsatisfactory extent reflect the value of the underlying investments*. Thus, the rules have to an increasing extent in recent years been given a liberal interpretation.

The institutional context

There are three levels of governance in Norway: State, county and municipal level. Public administration of forestry exists at all levels.

The highest public authority within the forest sector is the Ministry of Agriculture & Food. Directly placed under the ministry is the Norwegian Institute for Forest Research and the Norwegian Institute for Land Inventory. Both these institutions have tasks connected to research and data collection needs of the ministry. The Norwegian Agricultural Authority is an underlying directorate of the Ministry of Agriculture & Food, but has only limited relevance to forestry.

Within each county administration there is a department of agriculture that has a forestry section. In addition, there is a politically elected Board of Agriculture at the county level. The Municipality Administration has extensive responsibility both regarding forestry and the environment in general. In recent years, it has been a goal for the government to give the local level of public administration more responsibility in matters concerning agriculture and forestry. At the same time the budgetary situation of many municipalities has forced them to reduce personnel resources allocated to forestry.

Statsskog (literally State Forest), a state owned company, is the largest land owner in Norway with 11 million hectares of land (appr. 1/3 of Norway). Out of this, 2.7 million hectares is municipal forest where rights of use are administered by Fjellstyrene (the Mountain Service). 10% of the total area of Statsskog is forest and the company's annual harvest amounts to 2% of total fellings in Norway. The Minister of Agriculture constitutes the General Assembly and appoints the Board of Directors.

Statsskog's history goes back to 1860, when Statens Skovvesen (the State's Forest Service) was established to supervise the state's forest properties. Up till 1957, the State's Forest Service existed as part of the Ministry of Agriculture, but has after that been a directorate under the authority of the same ministry. In 1993, the Directorate for the State's Forests was replaced by an enterprise with legal entity and with the state as sole owner. Although it is still a publicly owned forest holding all legislation relevant for private forest ownership applies to it. It is subject to the same arrangements for public support and control as private forest owners.

The Norwegian Forest Owner's Federation (NFOF) with its 45000 members is the main organisation for forest owners in Norway. NFOF is a cooperative organisation consisting of 8 regional associations and 380 local associations. The federation is an economic organisation involved with marketing roundwood and other forest products, and working for technical progress among its members. The organisation is also a considerable shareholder in Norwegian forest industries (appr. 20% of Norske Skog) with the intent to secure the market

³ Until 2004 known as the Ministry of Agriculture.

for its products. Its members had an annual harvest of industrial roundwood of approximately 6 million m³ in 2001 - around 60% of total harvest in Norway.

Norskog, the second major forest owner organisation, has only 220 members, but they represent an annual harvest of approximately 1 million m³. Thus, Norskog is an association for large forest owners. The organisation is an economic and political organisation, working to develop their members' possibilities to utilize their natural resources.

The objectives

The main objectives of forestry in Norway are defined by Parliament (Stortinget) and stated in the Forest Act (cf. previous section). The objectives of the other laws and regulations influencing forestry should be seen as supplements to the Forest Act in order to fulfil overall political objectives regarding the use of forest based resources.

The Ministry of Agriculture and Food has stated that *forest resources should be utilised such that the highest possible utility is achieved for the population, at the same time as resources are maintained and developed*. To secure forest resources for the future is in itself seen as a strong argument for public support to the forest sector.

The financial instruments

The main instrument in Norwegian forestry is the Forest Trust Fund (FTF). The FTF is a fund built by compulsory deposits made by all forest owners commercially selling timber. Different forestry actions may be financed by drawing from the fund, and may at the same time release public grants. Almost all direct public financing of forestry is channelled through the FTF.

From 1990 to 2000, the following main instruments and programmes were employed in Norwegian forestry.

1) Grants and soft loans for forestry investments (Forest Act)

- Afforestation
- Regeneration, reforestation and related works
- Tending of young stands
- Pruning in stands
- Fertilisation
- Thinning (first time)
- Drainage and improvement of existing drainage
- Forest operations (in steep terrain)
- Construction and improvements of forest roads
- Forest plans (individual plans for forest owners)
- Transport subsidies
- Investment grants

2) Technical assistance

- Forest (Extension) Service
- Support for forestry organisations

3) Environmental compensations

- Acquirement of privately owned lands for nature conservation purposes (Nature Conservation Act)

- 4) Joint public supply programme for private and public forestry:
- Seed production

Financial and administrative inputs

Public financing of forestry started already in the middle of the 19th century, towards the end of the 1850's. However, funds were limited and quite modest. Grants for forestry grew steadily towards the First World War. With the war came a financial crisis that brought subsidies to forestry to an end temporarily. It was not until after the Second World War that public funding of forestry picked up again. There were some short term programmes for forestry funding from 1930 to 1940, but they were mainly a means to reduce unemployment. In this first period, the main part of grants went to silvicultural measures like reforestation.

Later there has been a multitude of sources for public funding of forestry. Several different public funds have been raised to support forestry, and in certain time periods they have been the main source of support. Today, the main share of public funding of forestry comes directly from the Ministry of Agriculture and Food or via the Agricultural Development Fund.

The main source for funding is direct contributions from the Ministry of Agriculture and Food. However, some funds come from municipalities. A large share of funds from the Ministry is distributed through the Forest Trust Fund. Also, the FTF is an important source for funding of forestry, as forestry measures financed via the fund may release substantial tax concessions.

For the period 1991-2000⁴, total public funding of the forest sector totals € 587 million⁵, approximately € 59 million per year. The annual sum has varied from 47 to € 99 million. On an annual basis, approximately € 25 million of total funds are distributed through the Forest Trust Fund. The remaining sum is distributed directly from the Ministry of Agriculture and Food. Of the funds through FTF, some € 21.5 million are direct grants and € 3.5 million are from the interest earned on the fund. Total administrative costs of neither the FTF nor other programmes have been available.

According to the previously described instrument groups, total public funding for forestry in Norway has been as follows:

1) Grants and indirect technical assistance has for the period been € 33 million on an annual basis (€ 330 million in total). Of these, € 11.6 million goes to silvicultural work. The main silvicultural investment is reforestation. Grants covered approximately 1/3 of total silvicultural costs. Annual grants for construction of roads are approximately € 9 million. Also for forest roads, around 1/3 of the total costs were covered by grants. Forest plans are annually supported with € 1.5 million. Annually, some € 3.8 million from the interest earned on the fund is redistributed as funding for projects (€ 1.5 mill.), informational services and courses (€ 0.9 mill.), and the Forest Owners Association (€ 1.4 mill.). Also for the years 1993 and 1994, a temporary investment support was granted because of difficult market situations. The grants were € 22.7 and 3.6 million respectively.

⁴ It must be taken into consideration that data are incomplete for 1991 and 1992. However, no significant errors should exist.

⁵ Inflated to 1999-prices with cost-of-living index and converted to € with exchange rate 8.3101 NOK/€. All numbers hereafter are real prices in 1999 currency.

2) The cost of the Forest Service, i.e. public technical and administrative support, is estimated to approximately 20 million € annually, or 200 million € in total for the period 1991 to 2000. This is the cost of administration at both the municipal and regional level. Funds are mainly allocated for advisory services and estate-level planning, and partly for administration of the Forest trust Fund.

3) Public funding for conservation and protection of forest land amounts to € 70 million. The funds have varied a lot over the years, from a low € 2.3 million in 2000 to € 24.5 million in 1993. Funds are mainly spent for establishing conservation areas on private land according to the Nature Conservation Act. From 1995, all funds are from a special programme for the protection of coniferous forests in Norway.

4) The Norwegian Forest Seed Station is a joint programme for public and private forestry as it is publicly supported to secure future provision of seeds for forestry purposes. At the same time it provides seeds for Norwegian nurseries, thus enabling production of seedlings. An annual quantity of 70 (1991) to 40 (2000) million seedlings has been provided by nurseries at national level. The annual public support for the Norwegian Forest Seed Station is estimated to € 400 000.

The beneficiaries

All policy means in Norway have in principle been available for all forest owners. Statistics have not been available for this report to show whether certain groups of forest owners have benefited more than others. Preliminary analyses indicate that over such a long period as 10 years, a very large part of the forest owners have utilised the different and most important support programmes. Approximately 20 000 forest owners have benefited from grants for silvicultural activities each year during the analysed period. The number of forest owners receiving grants for forest plans has annually been around 2000. A total of 83 000 forest owners have received grants for construction of forest roads. Investment support in 1993 and 1994 was given to 30 000 forest owners.

Maintaining rural employment opportunities has been an important objective of many forest policy initiatives in Norway. For many years forestry generated a substantial part of employment in rural societies. Subsidies that contributed to higher activity in forestry, therefore, also contributed to more jobs in rural areas. As mechanisation of various forestry operations took place, particularly from 1945 to 1985, employment in forestry has been drastically reduced. Consequently, subsidies to forestry are no longer a powerful means of rural development policy.

The public at large have benefited through improved forestry and income generated from the use of the forest resources. This includes the benefits of non-marketed services like recreation and protection of biological diversity. On the other hand some subsidies, e.g., to road construction, drainage of bogs and mires, and afforestation, have had negative impacts on biodiversity and recreational quality. Such subsidies, therefore, have benefited forest owners (and consumers of wood), but have to some extent harmed the general public.

The output

Annually, some 30 to 40 million (at the end and the beginning of the period, respectively) seedlings have been used to reforest approximately 20 000 hectares of land. Somewhere in the range of 9 to 11 million hectares have been treated annually in relation to reforestation

(clearing of fields, site preparation etc.). 9 - 18 thousand hectares of young forest have been tended for wood production purposes each year.

At the beginning of the 90's, drainage of land was extensive, with 1400 and 1200 kilometres of ditches made in 1991 and 1992. In 2000 however, only 20 kilometres of new ditches were made.

From 1991 to 2000, a total of 18 000 kilometres of roads were constructed. There has been a decrease in activity, from 2 800 km of new roads in 1991 to 1014 km of new roads in 2000.

The annual harvest of industrial roundwood has the last decade varied between 8 and 11 mill. m³. In addition about 1.5 mill m³ of fuelwood is harvested annually.

Investment support was given for 8.8 million cubic metres of harvested roundwood in 1993 and 1994.

The output of the financial assistance in terms of effectiveness and efficiency is hard to judge at present due to the fact that very few studies exist regarding the effectiveness and efficiency of forest policy means in Norway.

Forestry taxation

The following taxes are the most important for forestry in Norway:

Average income taxation of forestry

From 1954, there has been direct taxation of net income in Norway (the previous Tax Act: Ministry of Finance, 18th of August 1911 no. 8, changed 12th of December 1952). Direct taxation in forestry leads to tax credits and increased rotation periods, i.e. it becomes more favourable to use forest as a capital placement (Johansson & Löfgren, 1985). Furthermore, there is a progressive taxation system in Norway. With large variations in income, as is a typical situation in forestry, progressive taxation becomes unfavourable. Therefore, an average tax is applied to income from forestry in Norway. The average taxation system was introduced together with direct taxation in 1954. Income declared for taxation in a given year is the average income for the previous five years-period. This reduces the effects of the marginal tax rate, as well as giving further tax credits. Also, special rules apply to ending and starting of average taxation, which implies further gains for the owner.

The system with average taxation of income from forestry will, most likely, end in 2005 or 2006.

Taxation of property and estates

Wealth tax on forest properties are regulated by both the Tax Act (Ministry of Finance, 26th of March 1999 no. 14) and the Tax Assessment Act (Ministry of Finance 13th of June 1980 no. 24).

The Tax Act, §4-11 states that *the value of forest is set to the yield the forest may produce when subject to rational management*. Further details on the calculations are given in *Regulations on assessment and appraisal of forest* (Ministry of Finance, 14th of November 1999 no. 1211, by authority of the Tax Assessment Act §7-1). Here, it is stated that the value of forest is decided by *capitalising the calculated real net value of the annual usable increment* (§9).

The value declared for wealth taxation is thus highly dependent on the applied rate of capitalisation. At the moment, this capitalisation rate is politically decided to be 12.5% p.a.

Taxation of property transfers and transactions

Transactions of forest properties are regulated by the Concession. Prices on forest land are controlled by regulating the allowed interest rate applied in valuations of forest properties. At present, this rate of capitalisation is 4% p.a. However, it has varied throughout the period of study in this report. From 1989, it was increased from 7 to 9% p.a. In 1997, it was again lowered to 7% p.a. It was in 2001 lowered further to 5%, before being lowered to 4% p.a. in 2002. The effect of lowering the capitalisation rate is that property prices increase. Whether the price control has had positive or negative aspects to it depends on whom you ask, but the price regulations have most likely been effective with regards to cementing the property structure. Most probably the price regulations have led to a much lower trade of forest land than we would otherwise have seen.

Prior to 1996, means from the Forest Trust Fund could be used to lower the cost price of property at transfer (the previous Tax Act: Ministry of Finance, 18th of August 1911 no. 8). This arrangement was limited to transfer between close relatives. Maximum 10% of the cost price could be financed via the fund, and only deposits exceeding the minimum of 5% deposited within 5 years prior to and 3 years after property transfer could be used for this purpose. The arrangement was originally ended in 1992, but reintroduced for 1993. As the arrangement involved deposits from 3 years after property transfer, it was effective until 1996.

1 Introduction

1.1 Background

This report is a contribution to the research project “Evaluating Financing of Forestry in Europe”, financed under the 5th framework programme “Quality of Life and Management of Living Resources” (5.3.1 Multifunctional Management of Forests). The European Forest Institute (EFI) in Finland manages the project.

There is wide consensus globally and in Europe on the need to create *financial mechanisms to develop new markets for environmental services* (UNFF-3) as well as to use *innovative economic instruments for achieving forest-related goals* (MCPFE-4). In the designing of future strategies and related implementation tools, evaluations of recent public interventions should not be missed out.

This report has as its main objective to provide background and a basis for evaluation and analysis of financing of forestry in Norway. The report will include not only quantitative data, but also bring in the institutional context in which public intervention is carried out in order to enable a more complete evaluation at a later stage.

Concerning economic effects, the EFFE project will consider intervention effects on the markets for timber and non-timber forest products, and funding effectiveness and efficiency with regard to set goals. In regard to ecological effects, the study will take into account the performance criteria that have been defined under the Ministerial Conferences for the Protection of Forests in Europe. Under the concept of social effects, we will focus on 1) effects on rural and regional development, especially employment and income effects, and 2) effects on the working and living conditions of forest workers and small-scale forest owners.

1.2 Forest resources

Norway is situated in the boreal coniferous vegetation zone, with Norwegian mainland stretching from 57° to 71° north. A large part of the country is thus north of the polar circle and temperature is to a large extent the limiting factor of forest growth. Topography is varied: 32% of the land area is below 300 meters above sea level and 20% of the land area is situated above 900 meters above sea level.

Three species are important in commercial exploitation of forests: Norway spruce (*Picea Abies* (L.) Karst), Scots pine (*Pinus Sylvestris* L.) and birch (*Betula Pubescens* and *Pendula*).

Norway has a strong tradition for statistics on natural resources. A national inventory of forests (the National Forest Inventory, NFI) is carried out with a 5 to 10 year cycle, the first performed in the period 1919-30 and the latest in 1994-98. The inventory is performed by The Norwegian Institute of Land Inventory (www.nijos.no). In 1986 a set of permanent sample plots were established. In total there are 16 000 sample plots, with about 10 500 situated on productive forest land and other wooded land below the coniferous forest limit⁶.

⁶ The definition of (coniferous) forest is at least 60 trees pr. hectare that reaches a height of at least 5 meters (Tomter, 1999).

The productive⁷ forest area in Norway is according to Tomter (1999) approximately 74 020 km² (~27% of total land area). Non-productive forest areas and wooded mires covers respectively 17 300 (6%) and 6 030 (2%) km², while open mire covers 7 630 km². Figure 1 shows forest cover in Norway.

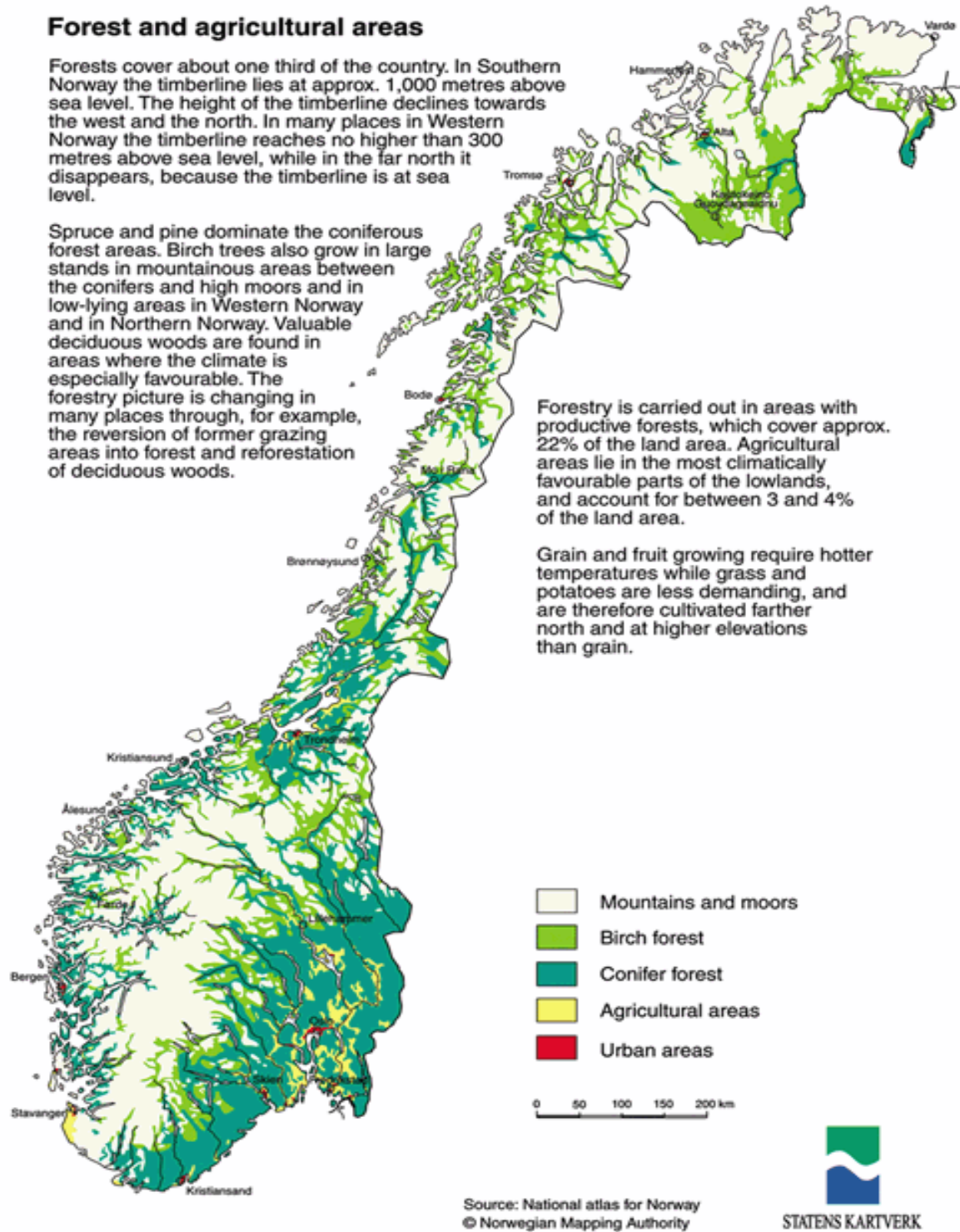


Figure 1 Forest and agricultural areas in Norway. 2003. Source: Norwegian Mapping Authority.

⁷ Productive forest has an annual yield of at least 1 m³ wood including bark per hectare (Tomter, 1999).

Norwegian forest resources have increased substantially the last 80 years surveyed by the National Forest Inventory. As Figure 2 shows, the standing stock has increased for all three forest species.

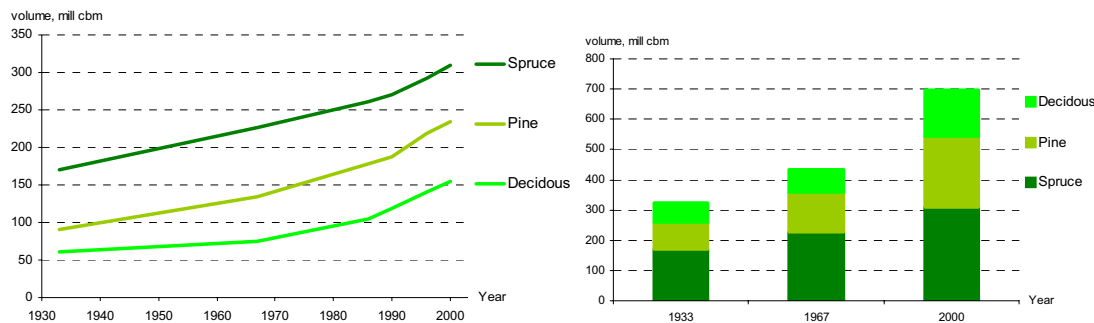


Figure 2 Development in standing stock 1933 to 2000, for each species (a) and in total (b). Source: Tomter (1999).

Standing stock (including bark) on productive forest land is estimated to 716.277 million m³. The standing stock holds 46% Norway spruce (*Picea abies* (L.) Karst), 32% Scots pine (*Pinus silvestris* L.) and 22% deciduous trees (mainly birch species: *Betula pubescens* and *pendula*). The yearly increment is estimated to 21.053 million m³ (excl. bark), with 53% spruce, 25% pine and 22% deciduous tree species.

Confer Tomter (1999) for a further and detailed overview of Norwegian forest resources.

1.3 A brief historical overview

The following chapters are mainly based on Bonnevie-Svendsen, Børset, Seip, Strand, Wibstad & Maartmann (1960), Fryjordet, Langsæter, Wisth, Sørhuus & Skinnemoen (1962), Fryjordet (1992) and Vevstad (1992).

1.3.1 Forests in the Norwegian economy

Forestry has been important in Norway for a long time. Around the previous millennium change, exploitation of different forest products became organised and commercialised. During the 11th, 12th and 13th century, timber was widely used as a heat source for production of iron, salt and later tar. Salt was exported to other Nordic countries. Also, timber for ship-building became important as a commodity and along with that transportation in itself became an important business. As saw milling and sawing technology developed throughout the 14th and especially the 15th century, sawn wood became a large export commodity to close-by countries like Denmark, Scotland and the Orkneys. Later, during the 16th century, England, northern Germany and the Netherlands were large buyers of sawn wood. Also the countries on the Iberian Peninsula were important buyers of lumber. As transport from the Baltic Sea, and thus the other Nordic countries, was expensive, Norway experienced a near-monopoly situation on the lumber and timber markets. The main reason for making this expansion in production of processed wood possible, was the “sash saw” developed during the 15th century. The “sash saw” takes its running power from waterfalls, of which there are many in Norway. This new technology gave an immense increase in productivity, which again lead to high profits. Another main, driving factor for increased production was of course demand for wood products in Europe.

The number of sawmills grew rapidly. Sunnhordland, a region in western Norway, held only 9 mills in 1563 but more than 50 in 1601, as for Nordfjord the increase was from 17 to 67 (1603). Norwegian forest industry prospered. Increased economical importance led to regulations of trade and on fellings in order to control lumber export and prices both nationally and internationally. The main reason was a tendency towards stagnation and falling profitability during the 17th century. Regulations however, changed with the prevailing market conditions. Around 1700, bans on fellings was lifted several times when lumber prices were high.

Wars in Europe, falling demand and high transportation costs gave a slow start to the new century and only towards the end of the century, in the 1780's and 90's, export picked up again. However, the increase was not as large as expected taking into consideration demand and import in central Europe. Production capacity was one of the limiting factors, but in addition national demand increased.

Changes in market conditions were more rapid at the end of the 18th and beginning of the 19th century than they had been before. In 1808 and 1809 export diminished almost to nothing because of war and hindrance of freight by ship to England (which was still the most important buyer of lumber), but already in 1812 there was a shortage in manpower in Norway as lumber production had sped up due to the high prices the unmet demand in England had caused. England however, had learnt from the war that supply had to be more stable and not dependent on possible enemies of war. The new world, America, had vast amounts of timber but expensive transport. Market conditions were levelled by taxes on import from Norway. Throughout the 1820's and 30's Norwegian forest industry experiences a real depression, with mills closing down and people being out of labour. In 1830, the value of forest land was only $\frac{1}{5}$ of its value before the war.

In 1842, England lowered its taxes on lumber import from Norway. This marked the end of a long depression and the start of positive business cycle that lasted till 1921. Free trade developed as the reigning idea in commerce in the 1860's and 70's, and this certainly gained Norwegian suppliers of wood products to the European markets. There were certainly ups and downs throughout the last half of the 19th century, but the general market situation was positive. Forest tax was introduced as a result of the maintained high incomes in the forest sector. It was of course widely debated. The forest tax was at first a property tax, but direct tax on income was applied widely especially in times of high incomes as this made municipalities better off.

In the autumn 1920, the effects of the First World War culminated. Printing paper prices fell by two thirds. So did also lumber prices. Pulp prices fell by more than 50%. Although export volumes did not change much in the following decades, decreases in income were devastating. Lower prices on forest products led to lower prices on timber.

The hard times forced both buyers and sellers to organise themselves. The Norwegian Forest and Land worker's Association had been established already in 1912, but were incorporated into the Norwegian Industrial Worker's Association in 1923. The Norwegian Forest Worker's Union was re-established in 1927 and in 1928 large forest owners came together in The Forestry's Employers Federation. Two days after the latter's foundation, the two organisations started talks about employment and salaries. At the same time as the workers and employers in the forest sector organised themselves, the Norwegian Forest Owner's

Association reorganised (originally established in 1913) and became the Norwegian Timber and Lumber Seller's Association. This made it an "economical" organisation rather than a political organisation.

These organisations were important in the inter-war period when the entire forest sector experienced a difficult market situation. The difficult market situation is partly reflected in Figure 3, where there is a set back in harvesting in the period from 1920 until after the Second World War. In addition to an unfavourable business environment, the first survey of the Land Inventory revealed the unsatisfying state of Norwegian forest resources. A Forestry Commission was formed, and their recommendations lead to a new act on Forest Protection in 1932.

One of the reasons for the bad state of forests were the existing taxation system, with taxation of income calculated as *an annual interest on the forest's market price or sales value* (Act on Land Tax of 1911). With falling roundwood prices and subjective estimation of property value, forest owners had to harvest in a forced rate in order to pay an income tax that decreased less than roundwood prices.

The Second World War was both good and bad for Norwegian forestry. The war brought increased exploitation of forest resources, which worsened their already unsatisfactory state. However, after the war there was an urgent need to rebuild the nation. Forestry was important in this respect, and gave increased political focus on and in the forest sector. Investment and production taxes on forestry and forest industry were initiated, and together they gave a basis for increased investments in primary forestry.

It was important to regain harvesting at the levels experienced prior to the war. In 1945, the forest industry still had almost $\frac{3}{4}$ of the old working stock, but only $\frac{1}{4}$ of the normal timber procurement (Vevstad, 1992). Moreover, forest industry was in general old and the technological development that could be seen elsewhere in Europe had not yet reached Norway.

Fluctuation in roundwood prices had for long been a discussion. Both forest owners and forest industry were concerned with prices on roundwood and wood products not following each other. The discussion on joint ownership of both forest and forest industry had started already in the 1930s. However, it was after the war the discussion picked up some heat. The government made price regulations for roundwood, so the important question was how changes in prices on wood based export products should and could be reflected in roundwood prices. Also to some extent, the forest industry experienced problems with getting all the wood they needed. Owning forest could resolve this problem. Vice versa, forest owners could secure markets for their products by owning forest industry.

Governmental price regulations, which had been enforced after the war, ended in 1949 and sellers and buyers of wood were given the responsibility of "clearing the market".

Although the result of the Forest Protection Act of 1932 and the increased efforts after the war was an improved forest situation, there was still worry concerning the future supply of wood resources. In 1951, a forestry commission was established. It's reports and recommendations lay the ground for a new act on forestry, the Act on forestry and forest protection of 1965.

Another consequence of the war was mechanisation. Mechanised equipment, especially for heavy transportation, had been developed for warfare, but one soon found other uses of such machinery in the agricultural sector and thus forestry. The chain saw was also an important step forward for the forestry sector. Another driver towards mechanisation was the increasing costs of labour. Mechanising forest operations made them far more efficient and cheaper. The down side was of course increased unemployment. In 1950 there were 33 000 man-years performed in Norwegian primary forestry, but in 1970 only 9 000 man-years were performed.

The Korean war and the general high demand for forest products gave historically high roundwood prices. This was the Golden Age for forestry, with high harvest levels and large investments in roads and silviculture, and in forest research. The importance of forestry and the forest industries for the national economy was very high.

In the sixties there was a small, but increasing move from focusing only on timber production. This continued more strongly in the 1970's. Because of urbanization, high economic growth and corresponding higher welfare partly caused by technological improvements, the demand of forestry environmental goods were increasing, in particular for recreation and wildlife. Also, the general environmental problems had made people more aware of environmental issues. In addition, urbanization/industrialization had weakened the environmental situation, i.e. decreased the supply of environmental benefits. Research, particularly on acid rain's possible effects and influence on forestry and ecosystems, also played an important role here.

A new Forest Act came in 1965, and was revised in 1976. All this gave changes in the forest management practice, towards increasingly more emphasize on smaller clearfelling areas, more national regeneration where possible, less monoculture and more multi-species stands. Also, it was put more emphasize on shaping the forest roads as well as the felling areas according to the landscape (Solberg 1998, Tikkanen and Solberg 1995).

In Figure 3, three sources are held together to show development in harvest level from 1600 till today.

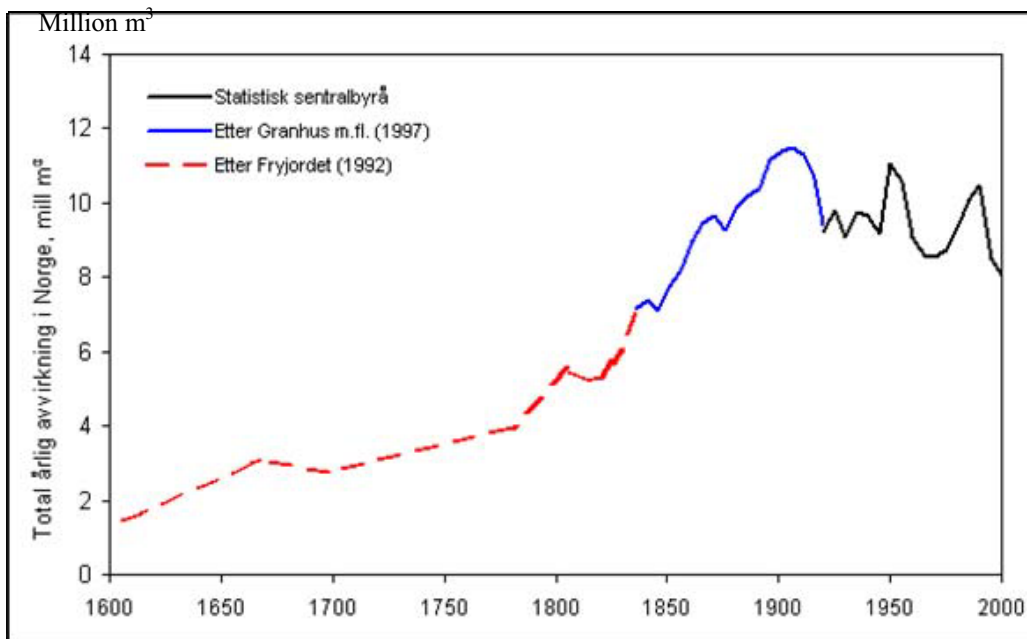


Figure 3 Commercial roundwood removals from 1600 to today. Sources: Fryjordet (1992), Granhus *et al.* (1997) and Statistics Norway (2004a). Illustration from Skogforsk (2004)

On the large scale, there has for the previous century been a decreasing trend in harvesting volumes. Standing stocks have for the same period increased (Figure 2).

In Figure 4, development in (nominal) gross domestic product is shown for different parts of the forest industry. The figure covers the three previous decades.

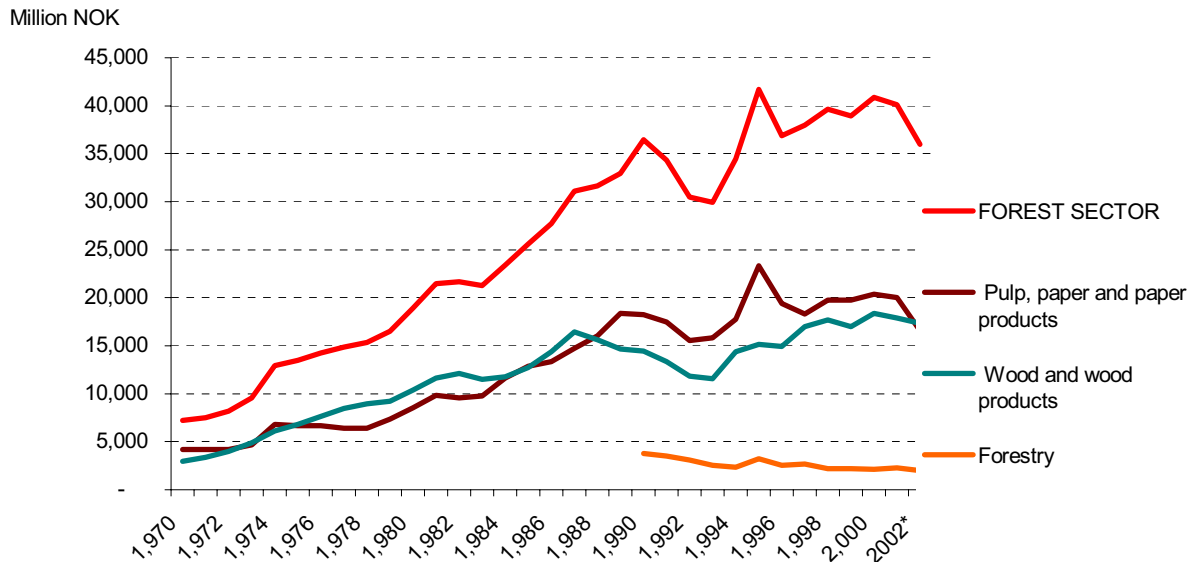


Figure 4: Gross domestic product in the forest sector and sub-sectors. Forest sector is the sum of all sub-sectors. 1970-2002. Source: Statistics Norway's National Accounts and Forestry Accounts. Nominal prices.

1.3.2 Forest ownership

As forestry and saw milling became more important and of economic interest during the 14th, 15th and 16th century, the aristocracy and the king developed an interest for forestland. Up till that time, farmers and partly the church had owned most forestland. Thus, the ownership structure was altered. There exists no reliable statistics on ownership for this period of time, but it is suggested that in the 13th century the church owned 40% of the land, the aristocracy and the crown possessed 20 and 15% respectively, and farmers owned the remaining 25%. By the end of the 16th century, partly as a result of the Reformation, the king had become the largest owner of forestland and saw mills in Norway. One would imagine that most church-owned land and also to some extent farmer-owned land, had been turned over to the crown.

Stagnation in the forest industry towards the end of the 17th century and the beginning of the 18th century forced many of the large forest owners to sell forestland. Through wars with Sweden in the 17th century, the crown had built up considerable debt, which was handled by selling forestland. Most of the land found its way back to farmers, often as common land with joint ownership. The result was a more fragmented ownership structure, but with only minor changes in use and management. Although forestland (and land in general) was traded freely in the market until 1888, there was no extensive amounts of landed traded.

In 1888, the first law on license for buying land - the Concession Act - passed the parliament, and in 1909 a forest specific concession law was approved. The Concession Act of 1909 gave municipalities a right of first refusal on forestland. The main reason for a law on land concessions was to restrict exploitation of Norwegian natural resources from foreign capital.

Throughout the 20th century, the Concession Act has been maintained. It has to a large extent managed to keep the property structure that existed when the act was formed. The average Norwegian forest property is today relatively small.

As can be seen from Table 1, non-industrial private forest ownership is dominating in Norway. Of the total 125 522 forest owners that were registered in 1989, more than 120 000 were so called individual owners. Individual owners are especially prominent in the smaller size classes. The average forest property is approximately 56 hectares.

Table 1 Properties, by size of productive forest area and owner group. Source: Census of Agriculture and Forestry 1979 and 1989. Forestry Statistics 2001: NOS C731.

	Total ¹	Area	Size classes in hectares				
			25 - 99	100 - 499	500 - 999	1000 - 4999	5000 →
1979	120 930	66 351	37 945	55 567	15 370	10 856	1 192
1989	125 522	70 122	37 683	58 317	16 489	11 817	1 216
Owner group (1989)							
1. Not owner ²	20	4	10	7	2	1	-
2. Individual owners	120 419	55 021	36 411	56 425	15 797	11 021	765
3. Properties of persons deceased	1 817	-	689	857	178	87	6
4. Co-operative ownership	645	600	151	255	104	117	18
5. Joint companies, institutions, foundations etc	1 050	1 394	239	401	180	170	60
6. Joint-stock companies	343	2 844	69	95	38	56	85
7. Local government	428	2 059	49	112	70	126	71
8. Common forests not owned by Central government	66	1 952	1	5	6	11	43
9. Common forests owned by Central government	117	2 185	1	4	8	40	64
10. Central government and the Educational Fund	617	4 062	63	156	106	188	104

¹ Properties with at least 2.5 hectares productive forest area.

² Comprise holders who rent their land on at least 20 years contract.

The number of owners, both non-industrial private and others, has been fairly stable for the last fifty years, although with a small increase (Figure 5). At the same time, there has been a large increase - by some 15% - in productive forest area. The changes in the number of forest owners is most likely related to splitting of existing properties due to inheritance, while the increase in forest area most likely is due to varying definitions of the upper timber line.

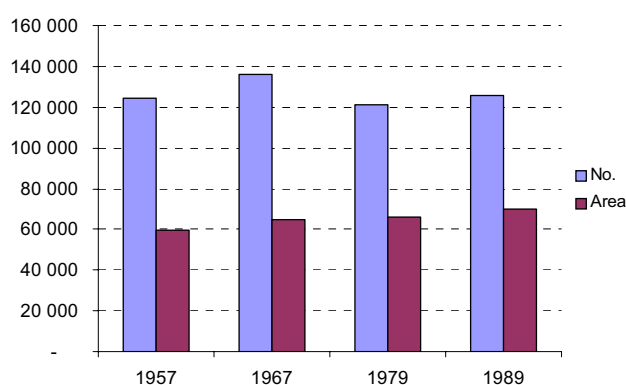


Figure 5 Number of forest properties and forest area in Norway. Source: NOS Census of Agriculture and Forestry 1989.

1.3.3 Introducing public institutions in forestry

Indirectly, forestry was affected in the 12th and 13th century by laws that regulated people's access to build ships for sale or to produce tar from wood burning. In the 15th century, laws aimed at securing the kings supply of roundwood for shipbuilding because of the increasing export of timber and sawn wood for shipbuilding. Furthermore, because of forestry's strong position in the economy, the kings position as a large owner of forest land and sawn wood exporter and to some extent political reasons, the state towards the end of the 16th century issued several acts and laws that regulated commerce with wooden products and especially export of these. This was the first, wary step towards what can be called a national forest policy. For some time there had existed taxes on different forest products, but this was not to exert influence on forestry or forest industry but rather to generate income for the state. Several decrees on Privileges of the Cities (1662), Forestry (1670 and 1683) and the Saw Mill Privileges (1688) tried to regulate both forestry, saw milling and trade with lumber. At this time a position as general inspector of forestry was established. The general inspectors' responsibility was to survey forest resources and their exploitation.

Concern regarding the rapidly increasing exploitation of forests grew, and in 1624 the probably first royal order on compulsory forest survey was declared. The reasons were both technical and economical, as one wanted to maintain both forest resources and income. Towards the turn of the century forest owners also experienced bans on harvesting. As regulations on forestry grew, a more autonomous forest authority was needed and in 1737 a national forestry administration was formed. In 1747, this administration was re-established as a commission on forestry. However, by the end of the 1770's, neither the forestry commission nor the forest administration existed. Public administration of forestry did not resurface until the middle of the next century.

This does not mean that the forestry sector was unregulated. Especially prominent were the already mentioned Saw Mill Privileges of 1688. They were upheld right through the 18th century and confirmed by law in 1818. In 1860 they ended by law, as new technology and free trade pushed the industry into a new era.

Increased exploitation of forests gave new concerns regarding the state of forests. Forestry commissions were established in 1849 and in 1859. Suggestions and proposals from the latter lay the ground for the first Norwegian Forest Act in 1863. It covered more or less only public forest. Along with the law came a public forest administration, established in 1860, which had surveys of forest resources as its primary task. The forest administration consisted of two foresters, educated in Tarrant in Germany, that were set to manage public forest and *to the extent possible render advice to private forestry* (Ministry of Agriculture, 1962b). The Forest Act along with the public forest administration formed the first public forest policy. Lack of knowledge concerning both forest resources and forest industry, together with a liberal attitude towards trade in general, limited forest policy to issues of forest protection and conservation. Still, this was clearly an appreciation of the importance of forest resources and forestry in the country's economy and the importance of maintaining forest resources for the future.

Public administration in forestry developed rapidly. In 1875, a Director of Forestry was established within the Ministry of the Interior. The Director of Forestry was responsible for the joint administration of both public forest and forest land owned by the church⁸. However,

⁸ The Educational Fund (In Norwegian: Opplysningsvesenets Fond).

as exploitation of especially private forest resources grew along with the birth of an emerging forest industry, administration of public forest also had to address problems in private forestry. The Norwegian Foresters Association and the Norwegian Forest Society also played important roles in providing assistance to private forestry. Both these organisations were private, but the Forestry Society administered public funding for private forestry from its establishment in 1898 until 1940 and thus had great influence on public spending in private forestry.

Concerns regarding the state of Norwegian forest warranted a forestry commission in 1930. Their recommendations lead to a new Act on Forest Protection in 1932. The Forest Protection Act was based on the principle of “freedom subject to responsibility”. The most important public intervention in forestry was marking of stands for harvest. One of the interesting features of the new act, in addition to its focus on protection of forest resources, was a tax on silviculture. 1% of gross value on all wood sales was collected by the Forest Service and kept until proper silvicultural measures for regeneration were carried out. This was the start of what is later known as the Forest Trust Fund. The new act of 1932 also authorised a stronger intervention in administration of financing of forestry, and especially the new silvicultural tax. This caused some debate in Parliament and among forest owners. However, there seemed to be general agreement about the leading principles of the law and its aims and purposes.

During the Second World War, discussions took place among leading foresters and bureaucrats concerned with forest policy. Especially prominent in these discussions was of course the need to “rebuild” the nation after the war, and how forestry could contribute in this respect. It was important to deliver sufficient amounts of roundwood for industry purposes, and the question was how public intervention could help. Autumn 1946, an investment tax on roundwood for industry was introduced. The industry tax was, like the silvicultural tax, supposed to benefit the forest owners, and forest owners had it at their disposal. Also, the tax was restricted in what it could be used for. At the same time, a tax on all roundwood sold to exporting industry was introduced. 20% of this tax was collected to a fund for promotion of forestry and forest industry.

These forestry taxes were introduced by authority of the provisional Decree on Prices from May 1945 and the Act on Prices from December 1946. This act was also used several times in price negotiations.

In 1951, another forestry commission, the fourth of its kind, was established. The prelude to the commission was the still existing worries for future forest resources. The Forestry Commission worked for almost eight years before giving their four reports: (i) Afforestation in Western Norway, (ii) Forest research and higher education in forestry, (iii) The work force in the forest sector and (iv) Guidelines for a forest policy. It was not until 1962, the commission’s conclusions and the Ministry of Agriculture’s comments to it reached Parliament. Still another three years went by before the new act on forestry, Act on forestry and forest protection of 1965 (Anon., 1965), were adopted. It still rules, but in 2005 the new Act is expected to come in practice.

1.4 The institutional context since 1990

1.4.1 Public administration in forestry

Forest Service

There are three levels of governance in Norway: State, county and municipal level. Public administration of forestry exists at all levels.

The highest public authority within the forest sector is the Ministry of Agriculture. Directly placed under the ministry is the Norwegian Institute for Forest Research and the Norwegian Institute for Land Inventory. Both these institutions have different tasks in connection to research and data collection needs of the ministry. The Norwegian Agricultural Authority is an underlying directorate of the Ministry of Agriculture, but has only limited task in relation to forestry.

Within each county administration there is a department of agriculture that has a forestry section. In addition, there is a politically elected Board of Agriculture at the county level. The Municipality Administration has extensive responsibility both regarding forestry and the environment in general. In recent years, it has been a goal for the government to give the local level of public administration more responsibility in matters concerning agriculture and forestry.

See Figure 6 for an overview of institutions and public administration in the forest sector.

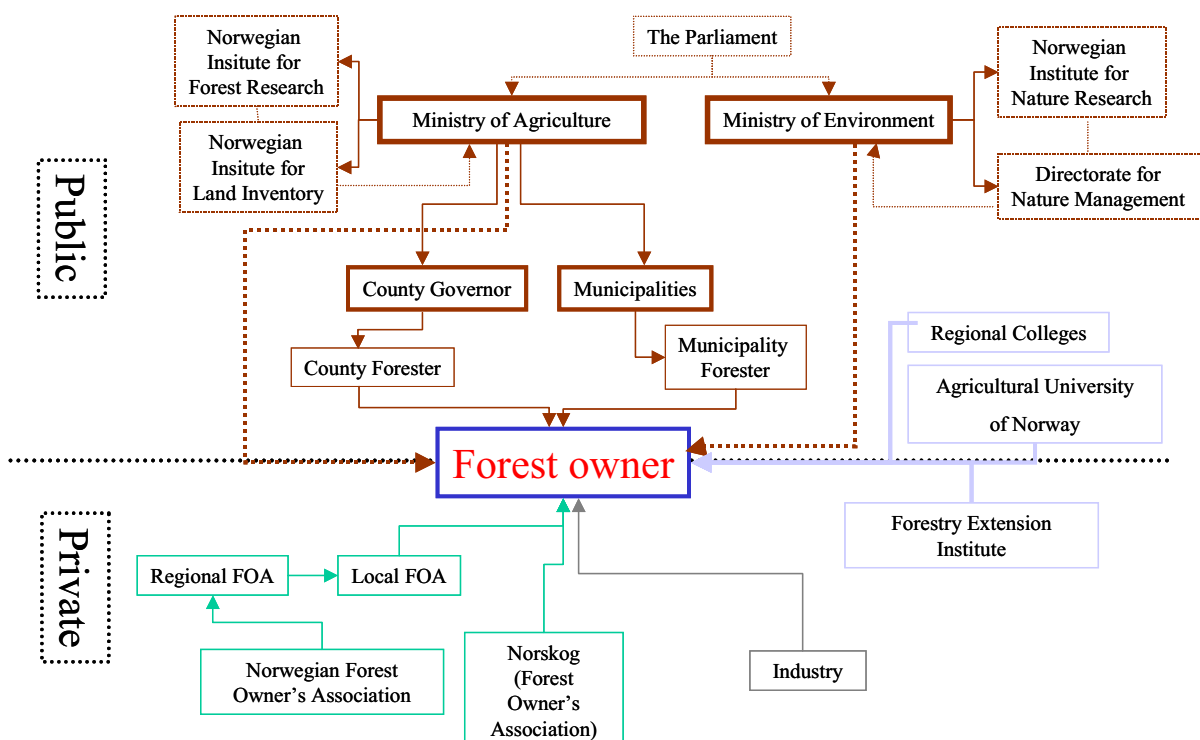


Figure 6 Institutions in the forestry sector. Brown colour indicates public administration and institutions, green colour indicates private organisations, blue indicates educational institutions (both public and private) and grey colour indicates (private) forest industry.

State Forest

Statsskog (literally State Forest), a state owned company, is the largest land owner in Norway with 11 million hectares of land (appr. 1/3 of Norway). Out of this, 2.7 million hectares is municipal forest where rights of use are administered by Fjellstyrene (the Mountain Service). 10% of the total area is forest and annual harvest amounts to 2% of total fellings in Norway. Statsskog is owned by the state and the Minister of Agriculture constitutes the working body.

Statsskog's history goes back to 1860, when Statens Skovvesen (the State's Forest Service) was established to supervise the states forest properties. Up till 1957 the States's Forest Service existed as part of the Ministry of Agriculture, but has after that been a directorate under the authority of the same ministry. In 1993, the Directorate for the State's Forests was replaced by an enterprise with legal entity and with the state as sole owner. Statsskog is today governed by the Minister of Agriculture working through its corporate assembly.

Statsskog shall "by itself, through participation or cooperation with others, manage and develop governmental forest land with all its resources and adjacent operations. Properties are to be managed efficiently aiming at an economic satisfactory result. Nature shall be protected actively taking into consideration recreation and outdoor life of the people. Resources must be exploited in a balanced way, and renewable resources must be maintained and developed" (§2 in the bylaws of Statsskog).

Statsskog manages forest owned by the central authorities, as explained earlier. Forest owned by municipalities is managed by the single municipality and the forest extension service there.

1.4.2 Legislation influencing forestry

Several acts are relevant to the forest sector, and although we have a specific forest act in Norway, other laws have large impacts on forestry. A collection of translated Norwegian Legislation can be found via the webpage of Lovdata (<http://www.lovdata.no/info/lawdata.html>).

Skogbruksloven: Forest Act

Forestry is regulated by the Forest Act (Anon., 1965). The Forest Act states that it's purpose is to "*promote forestry, afforestation and forest protection [...] by means of rational tending to achieve satisfactory results for those engaged in forestry and ensure an efficient and regular supply of raw materials for industry purposes*". Thus, it may seem that most emphasis is put on production of wood. However, the act also states that "*emphasis should be put on forests role as a source for recreation, part of the landscape, environment for animals and plants and arena for hunting and fishing*".

A new act on forestry is under way, and will most likely be approved by the parliament during 2005.

Naturvernloven: Nature Conservation Act

The law on Nature Conservation (Anon., 1970) affects forestry only indirectly. The act relates to nature conservation in general, like national parks, landscape protection areas, nature reserves etc. However, the law (§2) states that *Any person who is planning major works, construction or activities that will involve substantial changes in the character of the*

landscape or appreciable damage to the natural environment otherwise shall, before such activities are initiated, submit the matter to the competent authority pursuant to this Act for consideration. If development, construction or other activities will entail damage to the landscape or the natural environment otherwise, measures must be implemented to limit or counteract the damage to a reasonable extent. This must be interpreted as including forestry and supports the Forest Acts emphasis on forests as *an important part of the landscape and as an environment for plants and animals* (Anon., 1965: §1). The Nature Conservation Act also plays an important role when protecting large areas of forest, which is carried out with authorisation from the Nature Conservation Act. Only to a small extent does the Nature Conservation Act apply to conservation of small areas like e.g. key biotopes.

Odelsloven: Allodial law

For all farming or forest properties larger than 2 and 10 hectares respectively, certain regulations apply as to inheritance and right of primogeniture (Anon., 1974). In addition to securing inheritance by rights of primogeniture, the Allodial Law imposes a duty to settle down (within 1 year from transfer) and live on the property in question for a certain period of time (at the moment 10 years). The heir of a property may also according to the Allodial Law be allowed a discount (approximately 25%) when taking possession of the property. §56 of the Allodial Act states that *the primogeniture inheritor has a claim to a value assessment that is reasonable according to his/her financial situation.* In §14 of the Act on tax on heritage and gifts (Anon., 1964), it is stated that for agricultural properties being transferred subject to primogeniture rights, *value is set to ¾ of assumed market price.*

Clearly these regulations will affect the property structure as well as the pattern of settlement, and thus have an influence on the forest sector and forestry. There is no purpose stated in the act, but it is evident that the act aims at securing conditions for farming and forestry throughout the country.

Jordloven: Land Act

Both private and public land use is regulated by the Land Act (Anon., 1995). The purpose of the Land Act (§1) is to *provide suitable conditions to ensure that the land areas in the country including forests and mountains and everything pertaining thereto (land resources) may be used in the manner that is most beneficial to society and to those working in the agricultural sector.* The Land Acts regulations concern forestry mostly when it comes to restricting the division of properties. The act emphasizes *a property structure and operational solutions that may lead to reductions in costs of operation* (Ministry of Agriculture, 1995).

Konsesjonsloven: Concession Act

Sale of land used for agricultural or forest production is regulated by the Concession Act (Anon., 1974). The Concessions Acts' purpose is to *regulate and control the sale of real property in order to achieve effective arrangements to protect areas used in agricultural production and to bring about such ownership and user conditions as are in the best interests of the community at large in order to benefit (i) farming, horticulture and forestry and (ii) the need for land zoned for development purposes.* The act should work for a *socially desirable development in property prices, settlement and operational solutions.* In a white paper (Ministry of Agriculture, 1999b) commenting practise of the Concession Act, a socially desirable development in property prices is understood as a price development that considers

the property as a basis for housing and trade/business, and that prices should favour that who takes over the property.

This is mainly achieved through regulations of land prices. Calculations of land prices are subject to detailed regulation, and *the value of capitalised yield is seen as the natural basis for valuation of properties* in the agricultural sector (Note from the Ministry of Agriculture). The actual control of prices is accomplished by regulating to interest rate that is used for capitalisation of future annual yield.

The Ministry of Agriculture & Food⁹ states that *the present exercise of the Land and Concession Acts, and their decrees, leads to market prices on forest properties that to an unsatisfactory extent reflects the value of the underlying investments* (Ministry of Agriculture: 1999a, my translation). Thus, the rules have to an increasing extent in recent years been given a liberal interpretation.

1.4.3 Forestry financing programmes

Financing of forestry started already in the middle of the 19th century, towards the end of the 1850's. However, funds were limited and quite modest. Grants for forestry grew steadily towards the First World War. With the war came a financial crisis that brought financing of forestry to an end temporarily. It was not until after the Second World War that funding of forestry picked up again. There were some short term funding during the period 1930 to 1940, but they were mainly a means to help against unemployment. In this first period of financing of forestry in Norway, the main part of grants went to silvicultural measures like reforestation.

After 1945, funding of forestry increased. An overview of funding of forestry in Norway from 1945 to 1990 can be found in Baardsen (1991).

There has been a multitude of sources for public funding of forestry. Several different public funds have been raised to support forestry, and in certain time periods they have been the main source of support. Today, the main share of public funding of forestry comes directly from the Ministry of Agriculture or via the Agricultural Development Fund. Table 2 shows the composition of funding of forestry in Norway by main source.

Table 2. Public grants for forestry distributed through the Forest trust Fund in the period 1991 to 2002 by main source. ADF = Agricultural Development Fund. Million euros, 1999. Real prices. Data incomplete for 1991 and 1992.

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Ministry	20.546	23.509	39.632	24.703	16.906	15.230	12.420	15.376	13.829	10.994	8.704	6.568
Municipalities	1.617	1.521	1.311	1.463	1.342	1.387	1.225	1.172	1.045	1.339	1.205	1.086
ADF	1.413	2.967	3.620	3.187	3.680	4.324	5.535	6.318	6.476	7.130	6.835	6.774
TOTAL	23.576	27.997	44.563	29.352	21.927	20.941	19.180	22.865	21.351	19.462	16.743	14.428

Also, the Forest Trust Fund (see section 3.2) is an important source for funding of forestry, as forestry measures financed via the fund may release substantial tax concessions. We return to the matter of tax concessions in section 3.4.

⁹ Until 2004 known as the Ministry of Agriculture.

1.4.4 Forestry financing laws

See section 3.2 regarding the Forest Trust Fund.

1.4.5 Forest income taxation

Average taxation of forestry

From 1954, there has been direct taxation of net income in Norway (the previous Tax Act: Ministry of Finance, 18th of August 1911 no. 8, changed 12th of December 1952). Direct taxation in forestry leads to tax credits and increased rotation periods, i.e. it becomes more favourable to use forest as a capital placement (Johansson & Löfgren, 1985). Furthermore, there is a progressive taxation system in Norway. With large variations in income, as is a typical situation in forestry, progressive taxation becomes unfavourable. Therefore, an average tax is applied to income from forestry in Norway. The average taxation system was introduced together with direct taxation in 1954. Income declared for taxation in a given year is the average income for the previous five years-period. This reduces the effects of the marginal tax rate, as well as giving further tax credits. Also, special rules apply to ending and starting of average taxation, which implies further gains for the owner.

As the system of average taxation in forestry is meant to counteract the effects of a tax system that would otherwise seem unjust, it can be argued that the average taxation system does not include any element of subsidies. Neither is estimating the effects of the average tax system straightforward. We will thus in this report take the position that the average tax system in forestry is financially neutral.

The term income in the average taxation system encompasses the values of own housing, the value of wood for household use as well as other products from the forest and public grants for silvicultural measures (§14-81 of the Tax Act). The tax reform of 1992 broadened the basis for taxation, while at the same time lowering the marginal tax rate (Andersen, 2004). This should isolated reduce the effects of the system with average taxation of income from forestry.

The system with average taxation of income from forestry will, most likely, end in 2005 or 2006.

1.4.6 Other taxes applied to forestry

Taxation of property and estates

Wealth tax on forest properties are regulated by both the Tax Act (Ministry of Finance, 26th of March 1999 no. 14) and the Tax Assessment Act (Ministry of Finance 13th of June 1980 no. 24).

In the Tax Act, §4-11 states that *the value of forest is set to the yield the forest may produce when subject to rational management*. Further details on the calculations are given in *Regulations on assessment and appraisal of forest* (Ministry of Finance, 14th of November 1999 no. 1211, by authority of the Tax Assessment Act §7-1). Here, it is stated that the value of forest is decided by *capitalising the calculated real net value of the annual usable increment* (§9).

The value declared for wealth taxation is thus highly dependent on the applied rate of capitalisation. At the moment, this capitalisation rate is politically decided to be 12.5% p.a.

Taxation of property transfers and transactions

Transactions of forest properties are regulated by the Concession Act (commented in section 1.4.2). Prices on forest land are controlled by regulating the allowed interest rate applied in valuations of forest properties. At the present this rate of capitalisation is 4% p.a. However, it has varied throughout the period of study in this report. From 1989, it was increased from 7 to 9%. In 1997, it was again lowered to 7%. It was in 2001 lowered further to 5%, before being lowered to 4% in 2002. The effect of lowering the capitalisation rate is that prices increase. Whether the price control has had positive or negative aspects to it depends on whom you ask, but the price regulations have undisputedly been effective with regards. Most probably the price regulations have led to a much lower trade of forest land than we would otherwise have seen.

Prior to 1996, means from the Forest Trust Fund could be used to lower the cost price of property at transfer (the previous Tax Act: Ministry of Finance, 18th of August 1911 no. 8). This arrangement was limited to transfer between close relatives. Maximum 10% of the cost price could be financed via the fund, and only deposits exceeding the minimum of 5% deposited within 5 years prior to and 3 years after property transfer could be used for this purpose. The arrangement was originally ended in 1992, but reintroduced for 1993. As the arrangement involved deposits from 3 years after property transfer, it was effective until 1996.

Tax concessions on means from the Forest Trust Fund

According to *Regulations on tax concessions on financing of certain measures by the Forest Trust Fund* (Ministry of Finance, 23rd of August 1983, by authority of the Tax Act of 26th of March 1999 no. 14), tax concessions are allowed for certain measures in forestry financed by the Forest Trust Fund. This is explained further in section 3.4 on tax concessions.

1.5 The socio-economic context since 1990

1.5.1 Non-industrial private forest ownership

Forest ownership has been fairly stable for the last two decades, as one can see from Table 3 with only a small increase in the number of properties or forest area. As law heavily regulates property transactions and one needs concession to acquire forest land (as explained in section 1.4.2), it is evident that large changes in the property structure will take time.

Table 3 Forest properties¹ and productive forest area, by owner group. Km². Productive forest land. Source: NOS Census of Agriculture and Forestry 1989.

Owner group	1957		1967		1979		1989	
	No.	Area	No.	Area	No.	Area	No.	Area
Total	124 237	59 545	135 888	64 824	120 930	66 351	125 522	70 122
Individual owners ¹	120 793	43 550	131 708	48 716	118 039	51 108	122 236	55 021
Other private	1 982	5 103	2 937	5 163	1 669	5 019	2 038	4 838
Common forest	55	1 772	61	1 974	51	1 751	66	1 952
Public	1 407	9 121	1 182	8 972	1 159	8 474	1 162	8 306

¹ In 1957 and 1967 properties with productive forest area and/or afforestation area totalling at least 0.5 hectares below the coniferous forest line. In 1979 and 1989 properties with at least 2.5 hectares of productive forest area. Includes properties of persons deceased and holders who lease their land for at least 20 years.

The Norwegian Forest Owner's Federation (NFOF) is with its 45000 members the main organisation for forest owners in Norway. NFOF is a cooperative organisation consisting of 8 regional associations and 380 local associations. The co-operation is an economic organisation involved with marketing roundwood and other forest products, and working for technical progress among its members. The organisation is also a considerable shareholder in Norwegian forest industries (appr. 20% of Norske Skog) with the intent to secure the market for its products. Its members had an annual harvest of approximately 6 million m³ in 2001.

Norskog, the second large forest owner organisation, has only 220 members. However, these 220 members represent an annual cut of approximately 1 million m³. Thus, Norskog is an association for large forest owners. The organisation is an economic and political organisation, working to develop their members' possibilities to exploit their natural resources.

1.5.2 Forest Extension Service

The Forestry Extension Institute (in Norwegian: Skogbrukets Kursinstitutt, SKI) is a non-governmental organisation founded in 1958. The Institute is organised as a partnership with 39 forestry organisations and scientific institutions forming the membership. The main purpose of the Institute is to provide continuing education and training in the forestry sector and in forestry related fields, as well as to heighten public awareness of the importance of forestry. This is tried accomplished through educational material, conferences and consulting services. The activities of the Institute are countrywide and cover a large variety of subjects within forest management, planning, economy, silviculture, ecology, forest operations and techniques, wildlife management and multiple use of forest land (Forestry Extension Institute, 2004).

1.5.3 Forest industries

Norway has a strong forest industry, mainly based on lumber, and pulp and paper production. Both are industries with long traditions, and have been important in building and developing the Norwegian economy throughout the 19th century and the beginning of the 20th century. In the last half of the previous century, oil has been dominating in the economy. According to Statistics Norway, the groups "Wood Products" and "Pulp, Paper and Paper Products" constituted 7.8% of the production value in Norwegian industry in 2001 (see Table 4). In addition, part of the furniture industry is wood based and hence can be viewed as forest industry. Table 4 does not contain numbers for primary forestry.

Table 4 Principal figures for local kind of activity units, by industry division: Mining, quarrying and manufacturing, 1997-2001¹. Source: Statistical Yearbook of Norway 2003 (Statistics Norway, 2004).

		Number of activity units	Persons employed	Compensation of employees	Production value	Costs of goods and services consumed	Value added at market prices	Gross investment
<i>Million NOK</i>								
Industry	2001	10 812	272 891	96 978	502 298	353 704	146 706	15 946
Wood products	1997	1 008	15 143	3 702	16 708	12 092	4 616	777
	1998	1 051	15 531	3 969	17 309	12 308	5 001	649
	1999	966	14 566	3 687	16 556	11 752	4 804	447
	2000	998	14 634	3 890	17 846	12 625	5 221	321
	2001	949	14 313	4 093	18 756	12 688	5 951	509
Pulp, paper and paper products	1997	108	10 252	3 135	18 268	13 278	4 990	1 500
	1998	108	9 830	3 286	19 713	14 008	5 705	2 085
	1999	102	9 514	3 207	19 717	13 948	5 769	1 376
	2000	98	8 855	3 407	20 342	14 003	6 338	909
	2001	95	8 747	3 429	20 621	13 552	7 057	701
Furniture and other industrial production	1997	780	13 934	3 345	11 529	7 284	4 245	431
	1998	802	14 478	3 647	12 637	8 251	4 386	440
	1999	710	13 475	3 487	12 098	7 763	4 335	379
	2000	748	13 327	3 603	12 495	7 853	4 642	467
	2001	716	12 165	3 437	12 036	7 771	4 219	372

¹ Valued at market prices.

Wood based industry is also important as an export industry. In Table 5, export values for different segments of the forest industry is displayed along with the value of export of oil and gas and the total export value. During the 1990's, forest industry has been one of our main export industries. Forest industry is spatially scattered, and thus plays an important role for rural employment.

Table 5 Exports by industrial activity, 1997-2002. Million euros, 1999. Real prices. Source: Statistics Norway (2004b).

Industry ¹	1997	1998	1999	2000	2001	2002
Total	43,101	37,504	42,740	61,822	60,254	52,916
Forestry	25	23	27	26	19	19
Wood products	368	348	385	367	319	294
Pulp and paper	1,361	1,487	1,459	1,544	1,587	1,239
Furniture, other	443	461	476	516	527	480
Oil and gas	20,602	14,563	19,161	35,779	34,363	29,561

¹ Aggregates by industry are estimated linking detailed commodity information to the CPA-classification (Statistical Classification of Products by Activity in The European Community).

1.5.4 General public

The public debate on forestry in Norway has for the last decade centred on conservation of boreal forests, and the balance between timber production and environmental benefits from forestry. As pointed out in e.g. Solberg (1998a, b) biodiversity came increasingly strong on the forest policy agenda in the 1980's. Whereas the other environmental benefits from forestry like recreation, wildlife, cultural heritage, etc. were met and dealt with by forest management in the Nordic countries (to a more or less satisfactory degree, admittedly), forest biodiversity is much more complex and difficult to handle, for several reasons: It is hard to define what is meant by sustainable biodiversity/ecosystem (not all organisms are known, the habitat demand of several of the existing organisms in forestry are not known, the minimum

size required of the area which should be sustainable is unclear, etc.). Secondly, the connections between forest management and biodiversity is close to unknown - in particular the development over time. It is quite clear that in such situations where both the objectives of a system and the relationships are unclear (or biotopes unknown), conflicts will arise.

The main socio-economic drivers here have been, first, the environmental movement - both international and national - and research. Research has to a large degree laid the premises by pointing at the danger for severe irreversible changes and lack of knowledge at the same time.

The forest industry and timber producers were initially reluctant or in opposition to admit that sustainable forest ecosystem management was something more than sustainable yield of timber. In the last two decades, however, one can observe a great change in the forest industries here, as they have realized that a demand for sustainable forest ecosystem management will be a necessity to keep their markets/customers. A significant change of socio-economic drivers the last years has therefore been the demand from NGO's and International Organizations for eco-labeling and certification of the forest management of the area from where the timber input is coming, and later, the corresponding demand from forest industry on forestry and forest research for fulfilling this certification. The impact on this on public land management can already be felt in Norway, e.g.:

- More natural regeneration, less planting
- More multi-species and multi-layers stand management
- Demand for «new» planning where the spatial dimension as well as the dynamic dimension is important
- More selection felling is demanded (and introduced also some places)
- More use of non-permanent roads (winter roads)
- After cutting, small trees as well as old (rotten) trees are left standing, etc.
- Protection of important biotopes near water streams, etc.

Another factor which is not yet so strong but which may get strong in the future, is the issue of carbon sequestration in forests. Increased storage of carbon in forest biomass or forest industry products may prove to be a very cheap «insurance» for decreasing the concentration of the greenhouse gas CO₂ in the atmosphere (Solberg 1997). Also here, research and technology are playing important roles, together with NGO's and the general environmental awareness.

1.5.5 Employment and value added

Forestry is an important part of the rural economy in Norway, and is also an important main land (exporting) industry, thus employment is an important aspect of forestry. For many years forestry generated a substantial part of employment in rural societies.

The single most important factor affecting employment in primary forestry (not forest industry) is mechanisation of forest operations. In 1998, mechanised operations accounted for 46% on a national basis (Ministry of Agriculture, 1999a). This is lower than in other Scandinavian countries. The changes in mechanisation have been dramatic the last 50 years, and as mechanisation of various forestry operations took place employment in forestry has been drastically reduced.

The aggregate account for forestry, compiled annually by Statistics Norway, is shown in Table 6. The accounting is not consistent due to different rules for accounting and different sets of information for the individual year. However, it seems evident that income has decreased and costs have increased, thus giving a diminishing margin on forest operations. Isolated, this also leads to a decrease in employment in forestry.

Table 6 Aggregate account of forestry, logging and related service activities for 1991 to 2002. Million euros, 1999. Real prices. Source: Statistics Norway (2002).

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
A. Income												
Forest products (price from producer)	543.4	465.6	421.5	387.9	510.6	401.6	411.2	412.1	406.7	385.4	388.1	351.9
Changes in standing stock pr. 31.12.	-1.8	1.8	-0.4	0.7								
Investments	24.2	22.5	18.3	16.6	16.7	16.0	14.3	17.1	14.4	14.4	13.3	12.3
Repairs and maintenance, own effort	26.9	22.8										
Income in total	592.6	512.7	439.4	405.2	527.3	417.6	425.6	429.3	421.2	399.8	401.4	364.1
B. Costs												
Costs of operation								100.8	97.8	95.6	92.3	89.9
Goods and services from other sectors	65.7	64.1	73.6	69.0	83.2	68.1	68.2	56.6	56.0	55.1	52.7	48.9
Repairs and maintenance, own effort	26.9	22.8	18.2	20.9	17.1	18.2	16.2					
Costs in total			91.9	89.9	100.4	85.8	84.5	157.4	153.8	150.6	145.0	138.8
Gross product in forest sector	500.1	425.9	347.6	315.3	426.9	331.8	341.1	271.7	267.4	249.1	256.4	225.3
- Capital wear			74.6	73.8	73.6	75.1	75.9	89.5	99.3	108.8	78.1	78.0
- Sectorial subsidies	11.9	12.5	14.3	17.0	14.5	13.7	16.6	15.1	13.6	12.6	15.4	21.9
- Sectorial taxes	2.4	2.8	2.7	0.8	0.0	0.0	0.0	0.0	0.0			
Factor income in forest sector in total			284.5	257.7	367.9	270.5	281.8	197.3	181.7	153.0	193.7	169.2
- Labour costs								97.1	97.4	98.8	92.4	96.9
Operating result in forest sector								100.2	84.4	54.1	101.2	72.2

¹ Includes own consumption from 1998.

² Excluding salmon fishing.

Forestry's share in Norwegian value added production has also decreased the previous decades, partly due to falling timber prices and partly due to the emergence of other industries and sectors.

2 Materials and methods

2.1 Data collection

Data for this report is collected from a multitude of sources. However, the main source is data from a database collected by the Norwegian Agricultural Authorities on grants and use of funds from the Forest Trust Fund. The Forest Trust Fund and the database collected by the Norwegian Agricultural Authorities holds information on all forest operations and measures that receive public support (see section 3.2). In addition, data has been collected from Statistics Norway, the Ministry of Agriculture and the Agricultural Development Fund. If not otherwise noted, all numbers presented in this report is from the Forest Trust Fund.

Conversion rates and CPI

All values in this report are, if not otherwise noted, in Euros. The average¹⁰ exchange rate between Norwegian currency and euros for 1999 is used for conversion. According to Norges

¹⁰ The average over the year for daily middle prices (1415h).

Bank (Bank of Norway¹¹), the value of 1 euro was in 1999, NOK 8.3101. Also, all numbers are converted to 1999 price level using Statistics Norway consumer price index (CPI, see Table 7).

Table 7 Consumer price index. Base year 1999. Statistics Norway (www.ssb.no/english)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
CPI	1.222	1.181	1.155	1.129	1.113	1.086	1.073	1.046	1.023	1.000	0.970	0.941	0.929	0.907

2.2 Data analysis

The scope of this report is to provide basic information on financing of forestry in Norway, which in the next stage can be used for empirical examination of public spending on forestry in Norway and for comparative studies between countries. The data collection has put emphasis on the period 1991 to 2002. As such the analysis part of the report is limited to mainly discussions of data quality.

2.3 Limitations of the study

Costs of administration for all programmes and measures have not been available. Furthermore, it has been impossible to estimate the extent of the time spent by forest extension service (publicly employed personnel) on guidance and help for private forest owners. However, some costs occurring in connection to certain measures, actions and projects are accounted for by the Forest Trust Fund.

The database containing information on the transactions through the Forest Trust Fund is not complete for 1991 and 1992. In 1991, three counties (Hedmark, Buskerud and Nordland) are missing and other counties are in general not complete. In 1992, Buskerud county is missing from the data. Furthermore, observations from the first years of the data set might to some extent be registered in the wrong year. This leads to incorrect and large variations in total numbers for some years. However, over years the sum should be correct. It has not been within the time and resource limits of this project to produce complete and comparable numbers for 1990, 1991 and 1992.

Only to a limited extent will indirect effects of different measures be accounted for and analysed. It can for example, be difficult to estimate the indirect effects of income tax from timber sales.

Also, this study will not fully consider all ecological and socio-economic effects of all relevant measures, especially as it is difficult to obtain data and information on ecological effects of forest actions that takes place as a result of public financing.

There exist no reliable data sources containing data on forest actions that does not receive public support, as these actions are not recorded. For artificial reforestation and afforestation it is possible to calculate the extent of actions taking place without any governmental support, as one can find the total number of seedlings produced and deduct the total number of seedlings used in actions receiving public financial support. Unfortunately this is not possible

¹¹ http://www.norges-bank.no/english/statistics/exchange/kurs_ae1.html

for any other silvicultural measure or forest operation, as we do not know the extent of actions taking place. Neither is it possible to account for investments in forestry like construction of roads etc. that do not receive any public support, as these investments are neither recorded anywhere. However, we believe that for all different investments, measures and actions taking place in primary forestry, the present publication should give not only a fairly correct picture of public financing of forestry and investments related to this, but also of the total amount of investments in forestry as we can see no obvious reasons to refuse public support for forest investments when it is offered. Our impression is that this happens to a very little extent.

Only legislation valid in the period of interest will be referred to in the description of the individual measure or instrument.

3 Presentation and preliminary analysis of the information collected

3.1 Overview

Statistics Norway gives information on forest operations for the last 80 years (from 1920 on), but only on an aggregate level (see e.g. Statistics Norway, 2002). Before 1920, sources of information on forestry are scarce, especially for efforts other than harvesting, such as afforestation, reforestation and other silvicultural measures like young forest tending and thinning.

Statistics Norway only holds information on different forest actions that are subsidised (as explained in section 2.3). There exists no system for collection of information on forest operations/actions that are not subsidised. Thus, official statistics will produce an underestimate of the actual extent of forest actions taking place in Norway. (Overall statistics from Statistics Norway can be found at <http://www.ssb.no/english>).

Analyses of effects and efficiency of public financing of forestry in Norway can be found in Baardsen (1991), Ringstad, Løyland and Øy (1994) and Løyland, Ringstad and Øy (1995). Unfortunately, there are no later efficiency analyses of Norwegian forest policy.

3.2 Forest Trust Fund

3.2.1 General

In Norway, a special tax applies to all commercial wood sales (the forest tax). Finances from this tax are not collected to support public administration or to be redistributed, but belong to the individual debtor. The money is deposited in a publicly administered account under supervision of the public forestry administration, or what is known as the Forest Trust Fund.

The Forest Trust Fund (FTF) is a fundamental financial measure in the Norwegian forest policy program and the most important economic instrument in Norwegian forestry. The overall aim of the fund is to secure future timber supply from Norwegian forests by ascertaining financing of investments in primary forestry.

In principle, the fund system requires that buyers of wood automatically deduct a pre-decided percentage from the sale receipts. When different forest operations are carried out - on the individual property - money from this account may be used to cover costs subject to public rules. Financing different forest actions through the fund may also release grants and allow tax concessions. Grants are paid through the Forest Trust Fund account, and thus work as a cost-lowering grant. Deposits to the Forest Trust Fund are treated as costs in the annual account of the forest owner, and payments – including grants - from the fund are treated as income. Deposits in the account/fund are not subject to wealth taxation. Forest owners do not receive any interest made on their fund account. Interest earned is mainly used to cover administrative expenses and various measures to the benefit of Norwegian forestry at municipal and county level.

The Forest Service has the overall responsibility for managing and authorising the use of the fund. Different investments that may be financed via the fund includes e.g. planting, road construction, management planning, participation in professional extension courses, boundary establishment and management measures to support special environmental values in the forest.

The fund is regulated by separate regulations on deposits, withdrawals and use of money from the fund, and management and use of interest earned by the fund (elaborated in later subsections).

Background

The first survey of Norwegian forest resources completed by the Land Inventory in 1930, lead Parliament to pass the Forest Protection Act of 1932 (Øistad, Eid and Ellefson, 1992). This act required that funds should be collected from private forestland owners and reinvested in non-industrial private forests. In 1965, the Forestry and Forest Protection Act merged the 1932 and related funding systems to form the current Forest Trust Fund.

Exemptions from forest tax (Forest Trust Fund)

11 forest properties are by decision of the Ministry of Agriculture exempted from participation in the ordinary system for tax on wood sales (forest tax). They must answer tax as within the ordinary system, but administer all transactions regarding the timber sales tax by themselves. All of these properties are of considerable size (in a Norwegian context). One property is public, while the rest are private. Two of the private properties are stock companies, but with a single owner. Since these properties do not operate within the regular system, there is no complete statistics readily available concerning the total timber sales tax transactions. However, most transactions concerning these properties are in the data set.

3.2.2 Deposits to the Forest Trust Fund

Legislation

- (I) *Regulations on deposits to the Forest Trust Fund* (Ministry of Agriculture 5th of November 1976, by authority Act on Forestry of 21st of May 1965, §34 and chapter VIII), replaced by
- (II) *Regulations on deposits to the Forest Trust Fund and measuring of wood* (Ministry of Agriculture 28th of February 1994, by authority of the Act on Forestry of 21st of May 1965, §§42 and 16), replaced by

- (III) *Regulation on deposits to the Forest Trust Fund and measuring of wood* (Ministry of Agriculture 12th of June 1995, by authority of the Act on Forestry of 21st of May 1965, §§42, 56 and 16), and
- (IV) *Regulations on forest tax* (set annually by the Ministry of Agriculture, by authority of the Act on Forestry of 21st of May 1965, §§41 and 16).

Objective(s)

(I) states no specific object, while (II) + (III) aims at producing conditions for correct payment to the Forest Trust Fund and measuring of wood for sale, such that the forest extension service may exercise authority, control and guidance according to the Forestry Act.

(IV) has no specific objective as it only specifies certain details regarding deposits to the Forest Trust Fund, such as the basis for payment of forest tax (and thus deposits to the fund) and the size of deposits. This is done on an annual basis.

Characteristics and number of beneficiaries

(I), (II) and (III) applies to all private and public forests independent of owner type. (IV) work in cooperation with the others, and thus applies to the same group of owners.

General

The duty to deposit money in the Forest Trust Fund applies to all wood for commercial sale. Exceptions are Christmas trees and ornamental greenery, for which the forest owner may choose whether forest tax shall be paid. Also if total deposits over the year are less than 500NOK (60€), the forest owner may choose whether forest tax shall be paid. The Ministry of Agriculture sets the allowed interval of forest tax to be paid to the FTF on an annual basis (IV: *Regulations on forest tax*). At the present the allowed level of the forest tax is between 4 and 40%. This level was set in 2003. Prior to this, the allowed level for the forest tax was 5 to 25%. Deposit levels below 8% needs approval by the municipality, and is only granted for two years at a time. The forest owner has the duty to inform the buyer of wood on the prevailing level of the forest tax. If the forest owner has not chosen a specific level of forest tax, 10% forest tax is applied. The buyer withholds the forest tax until it is deposited into the Forest Trust Fund. Both seller and buyer of wood have a duty to ensure satisfactory measurement of wood in commerce (according to §16 of the Forest Act). However, this does only apply to wood for commercial sale and not for wood used by the owner in connection to own agricultural or forestry activity (i.e. household use).

The County Governor is responsible for the Forest Trust Fund. The fund should be invested with a bank or other financial institution approved by the Ministry of Agriculture to attain the best possible interest. Investments should be made in agreement with municipalities, where actual accounts are also placed.

Financial and administrative inputs

Total deposits to the Forest Trust Fund are shown in Table 8.

Table 8. Total deposits as grants and forest tax to the Forest Trust Fund. Million euros, 1999. Real prices.
Source: Statistics Norway.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Forest tax	59.9	54.4	46.0	21.3	24.0	49.0	31.7	32.8	30.3	29.3	26.3	26.6	22.8
Grants	29.1	29.3	32.0	22.5	25.9	21.8	20.8	19.1	22.8	22.0	20.3	17.9	15.1
Total	89.0	83.7	78.0	43.8	49.9	70.8	52.5	51.9	53.1	51.3	46.6	44.5	37.8

3.2.3 Use of the Forest Trust Fund

Legislation

- (I) *Regulations on use of deposits from the Forest Trust Fund* (Ministry of Agriculture 21st of June 1984, by authority of the Act on Forestry of 21st of May 1965, §§43, 46 and 47, according to Royal resolution of 25th of June 1965 and changed latest on 18th of December 1995) and
- (II) *Regulations on use of deposits from the Forest Trust Fund concerning local common land, public forest land, public common land, forests owned by the Educational Fund and other public forests under management of the Directorate for public forest* (Ministry of Agriculture 20th of April 1994, by authority of the Act on Forestry of 21st of May 1965, §§43, 46 and 47, according to Royal resolution of 25th of June 1965, changed 18th of December 1995), which were both replaced by
- (III) *Regulations on use of deposits from the Forest Trust Fund* (Ministry of Agriculture 20th of April 1994, by authority of the Act on Forestry of 21st of May 1965, §§43, 46 and 47, according to Royal resolution of 25th of June 1965, changed 18th of December 1995).

Also, withdrawals from the Forest Trust Fund is regulated by

- (IV) *The Taxation Act* (Ministry of Finance 26th of March 1999 no. 14, replacing The Taxation Act of 18th of August 1911 no. 8).

Objective(s)

(I) + (II) aims at *promoting silviculture, forest production and forest operations.*

(III) shall work to *secure that funds from the Forest Trust Fund are used for activities that stimulates active use of forest resources and establishment and construction of quality forest, while maintaining the forests functions in connection to biodiversity, landscape values, cultural heritage and outdoor recreation.*

Actions subject to funding

Under (I) the following measures are funded: Silviculture, afforestation, stand treatment and fertilisation (§3-1, planning and administration of the above mentioned, regeneration and establishment of forest as well as preparation and supplementary work, young forest tending, thinning, pruning, fertilisation, clearing of ditches and supplemental ditching etc.), planning and construction of forest roads (§3-2), alternative harvest promoting investments (§3-3), depreciation of property prices in property transfers (§3-4), maintenance of forest roads (§3-5), forest plans (§3-6), insurance (§3-7, forest fires and buildings in use in forestry activities), costs in connection to courses (§3-8, as approved by the ministry), marking of property boundaries (§3-9), value added tax (VAT) and investment tax (§3-10).

(II) supports these measures: Planning, administration and silvicultural measures (§3-1, regeneration and establishment of forest, also Christmas trees and ornamental greenery, as well as preparation and supplementary work. Quality and production enhancing measures like young forest tending, thinning, pruning, fertilisation, clearing of ditches and supplemental ditching etc. Measures to promote special environmental values, and ditching on firm ground when necessary to regenerate forest after harvesting), planning and construction of forest roads (§3-2: construction of new roads and reconstruction and upgrading of existing roads), alternative harvest promoting investments (§3-3), maintenance of forest roads (§3-4), forest plans (§3-5), insurance (§3-6, forest fires and buildings in use in forestry activities), costs in connection to courses (§3-7, as approved by the ministry), marking of property boundaries (§3-8), value added tax (VAT) and investment tax (§3-9) or other measures approved by the ministry (§3-10).

Under (III), the same as for (I) are supported, except for depreciation of property prices in property transfers (§3-4), which is not applicable for common land and public forest land.

For measures mentioned under §§3-1,3-2 and 3-3 in (II), special rules concerning general taxation has been set by the Ministry of Finance (IV). In short, using deposits from the Forest Trust Fund for these measures gives entry to tax concessions. This is further explained in section 3.4).

General

In Table 9 below, public grants distributed through the Forest Trust Fund are displayed.

Table 9. Public grants silviculture, forest plans, construction of roads, investment support and various measures paid to forest owners through the Forest Trust Fund by application, for the period 1991 to 2002. Million euros, 1999. Real prices. Data incomplete for 1991 and 1992.

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Silviculture	12.212	11.696	9.610	14.370	11.551	11.395	10.325	12.892	11.925	10.499	8.707	6.528
Forest plans	0.959	1.502	1.810	1.668	1.143	1.374	1.459	1.700	1.826	1.823	1.744	1.661
Roads	10.281	14.628	10.071	9.514	9.137	8.049	7.370	8.248	7.531	7.102	6.269	6.183
Invest.supp.			22.705	3.613								
Various	0.122	0.169	0.368	0.185	0.095	0.122	0.026	0.024	0.069	0.038	0.023	0.056
TOTAL	23.574	27.994	44.563	29.351	21.925	20.939	19.179	22.864	21.351	19.462	16.743	14.427

Mainly, public support in forestry goes to reforestation measures and construction of roads.

3.2.4 Management and use of interest earned from the Forest Trust Fund

Legislation

- (I) *Regulations on management and use of interest earned from the Forest Trust Fund* (Ministry of Agriculture 1st of November 1985, by authority of the Act on Forestry of 21st of May 1965, §§48), replaced by
- (II) *Regulations on management and use of interest earned from the Forest Trust Fund* (Ministry of Agriculture 15th of February 1994, by authority of the Act on Forestry of 21st of May 1965, §§48, changed 8th of December 2003 no. 1480), and
- (III) *Regulations on management and use of interest earned from the Forest Trust Fund collected by the Ministry of Agriculture* (Ministry of Agriculture 12th of March 1990 no. 138, by authority of the Act on Forestry of 21st of May 1965, §§48), replaced by

(IV) *Regulations on management and use of interest earned from the Forest Trust Fund collected by the Ministry of Agriculture* (Ministry of Agriculture 18th of February 1994 no. 138, by authority of the Act on Forestry of 21st of May 1965, §§48)

Objective(s)

(I) + (II) regulates management and use of interest earned from the Forest Trust Fund, such that these resources are *used in the best interests of forestry at large* in accordance with §48 of the Forest Act.

The same objective is stated for (III) + (IV), with the addition that it applies to that part of the interest from the forest Trust Fund that is collected by the Ministry of Agriculture.

Measures funded

Under (I) and (II), costs in connection to (i) administration and management of the Forest Trust Fund, (ii) covering of losses in connection to collection of deposits to the Forest Trust Fund, (iii) maintenance of residences and offices purchase with interests from the Forest Trust Fund, (iv) information, guidance and education, (v) grants for organisations and institutions (that work to promote interest for or development of the forestry sector), (vi) forestry planning (maximum 15% of total costs of plan), (vii) technical equipment (for silvicultural activities), (viii) projects or measures to promote forestry and (ix) other purposes.

Furthermore, the public forest service at the county level and the Ministry of Agriculture may collect earned interests, respectively maximum 20 and 25% of the total interests. At the present, the forest service and the ministry collect 18% of total interests. In the 1994-revision of the regulations, a 5% limit was set on costs for administration (i).

The use of means under (III) and (IV) should be controlled by a committee, assembled by members from the forest owners associations and public forest service at municipal and county level (§7 in I/II and §3 in III/IV).

(III) and (IV) supports (i) administration of the Forest Trust Fund, (ii) covering of losses in connection to collection of deposits to the Forest Trust Fund, (iii) grants for organisations and institutions (that work to promote interest for or development of the forestry sector), (iv) projects (to promote forestry at a national or regional level), (v) international work (both nationally and abroad), (vi) subsidies for counties with low interests earned on the Forest trust Fund, (vii) informational material, (viii) professional events, meetings and scholarships, and (ix) covering of costs of the committee controlling the use of interests from the Forest Trust Fund.

Financial and administrative inputs

In Table 10, reserves and total interests earned on the Forest Trust Fund are displayed. The interests have varied somewhat over the period, caused mainly by fluctuations in the overall achieved rate of interest, as reserves have been more stable than the financial rate of return.

Table 10. Reserves and total interest earned on the Forest Trust Fund. Million euros, 1999. Real prices. Source: Statistics Norway.

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Reserves	86.818	84.557	79.957	78.114	74.054	89.100	87.176	87.546	86.404	85.859	81.923	80.473
Interest	9.180	8.749	8.275	6.013	4.434	4.363	4.757	3.797	4.905	5.956	5.615	6.214

As explained, part of the interest from the fund is redistributed to public forest administration and the forest owner's association. The allocation of these funds is shown in Table 11. The have varied relatively much.

Table 11. Funds collected for Forest Service (FS), forest owners association (FOA) and Ministry of Agriculture (MA) from interest earned on the Forest Trust Fund. Million euros, 1999. Real prices. Data incomplete for 1991 and 1992.

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
FS	1.233	1.379	1.659	1.195	0.723	0.879	0.806	0.631	0.795	0.964	0.931	1.027
FOA	1.046	1.497	1.651	1.351	0.899	1.045	1.502	1.224	1.574	1.924	1.820	2.055
MA	0.825	1.209	1.346	1.098	0.774	0.809	0.853	0.691	0.855	1.091	1.036	1.173

Interest from the Forest Trust Fund is also used to cover costs of administration for the fund. Administration is undertaken both at the municipal and the county level. The main part of administration costs occurs at the county level. Costs of administration are shown in Table 12

Table 12. Costs of administration of the Forest Trust Fund covered by interests earned on the Forest Trust Fund. Million euros, 1999. Real prices. Data incomplete for 1991 and 1992.

Level	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Municipal	0.156	0.120	0.173	0.102	0.069	0.058	0.043	0.122	0.035	0.025	0.028	0.041
County	0.022	0.033	0.051	0.047	0.064	0.084	0.083	0.083	0.061	0.072	0.050	0.066

It is however, important to note that the administration costs displayed here are not the total costs of administrating the Forest Trust Fund. This is only administration costs that are covered by interests from the Forest Trust Fund. An unknown share of the total administration costs are covered by the local and regional forest service as part of their normal tasks and costs. In 1981, the workload of administrating the fund was estimated to 40 man-years (Ministry of Agriculture, 1984). 22.8 million euros had been deposited and 29.5 million euros had been withdrawn during that year, and the cash balance was 41.5 million euros by the 31st of December (Statistics Norway, 1985). The amount of monies going through the fund is today a little bit higher. However, the fund system has been rationalised, e.g. by technology. It is thus difficult to say how labour intensive administration of the fund is today.

3.3 Grants and soft loans

3.3.1 Afforestation

Legislation

- (I) *Regulation on grants for silviculture and afforestation* (Ministry of Agriculture 15th of May 1991, by authority of the Parliaments annual budget resolution), replaced by
- (II) *Regulation on grants for silviculture* (Ministry of Agriculture 16th of May 1994, by authority of the Parliaments annual budget resolution) ended February 2004. Also,
- (III) *Regulation on grants for establishment of forest on agricultural land not currently in use* (Ministry of Agriculture 1st of April 1992, by authority of the Parliaments annual budget resolution).

(III) is not formally ended, but no funds are allocated specifically for the purpose of afforestation.

Background

Special regulations for afforestation, in particular on agricultural land, were first established in 1991. At the time, agricultural land was to some extent abandoned due to low income on agricultural products. As a measure to manage deterioration of arable land, afforestation was supported. In addition, Parliament states that afforestation is a measure to achieve a steadily increasing national harvesting level in order to secure wood supply for industry.

Objective(s)

The objective of the regulations has evolved slightly. (I) was aiming at *securing a sustainable resource management by stimulating establishment and construction of forest*. In (II), it was a point to *stimulate establishment and construction of forest (stands) for production of quality timber*. In (III) the objective was broadened, as to *stimulate establishment of forest and production of Christmas trees and ornamental greenery on agricultural land presently out of use that based on an economical and environmental evaluation are suitable for such purposes*.

Afforestation of 4500 hectares is stated as total objective in a white paper from the Ministry of Agriculture (MA, 1991).

Type of economic instrument

Grant

Measures funded

The following measures are supported under (I): (i) Preparation of afforestation fields in afforestation areas, (ii) site preparation, (iii) reforestation, (iv) seeding, (v) clearing of broadleaves in reforestation fields, (vi) weeding, (vii) fencing, (viii) draining, (ix) fertilization, (x) supplemental reforestation, (xi) supplementary work in afforestation/ reforestation fields, (xii) young forest tending, (xiii) pruning, (xiv) improvement of existing drainage and supplemental draining, (xv) forest planning and (xvi) administration costs (all measures subject to more detailed specifications).

Under (II), these measures are funded for establishment of forest: (i) preparation work for afforestation, (ii) ditching (necessary for reforestation), (iii) site preparation, (iv) planting and seeding (both natural and artificial), (v) fencing, fertilisation and (vi) prevention of rot. For tending, these measures are funded: (vii) supplemental reforestation and seeding, (viii) young forest tending and weeding, (ix) pruning and (x) clearing of existing drainage and supplemental ditching.

(III) supports such actions as (i) preparation work for planting and seeding, as well as planting and seeding, (ii) restoration of already existing naturally regenerated forest on agricultural lands, (iii) preparations for natural regeneration, (iv) fencing and (v) other measures necessary to establish forest, (vi) preparation work for establishment of plantations and production of Christmas trees and ornamental greenery, and (vii) projects where establishing forest on agricultural land is an environmental action, e.g. to prevent erosion or run-off, or as part of the cultivated landscape.

The support rate varies for different regions and different measures. Grants can be given per area or as cost sharing/reducing grant. The rates for grants are set by the forest service at the

county level, and thus vary with the county. For what is known as forestry regions, no public support is in general given for afforestation measures.

Characteristics and number of beneficiaries

Under (I), all forest properties larger than 1 hectare and field size no less than 0.2 hectares are supported, while (II) supports all properties with a forest area larger than 1 hectare, and a maximum sustained yield less than 3000m³ according to forest plan if situated in south-eastern counties or Aust-Agder. (III) applies to all land owners.

Financial and administrative inputs

It has not been possible to separate afforestation and reforestation measures in the present data set, thus data on financial inputs and program outputs are displayed as part of reforestation measures in the next section on silvicultural measures.

3.3.2 Silvicultural measures

All silvicultural measures, such as (i) regeneration (reforestation and afforestation), (ii) supplemental reforestation, (iii) preparation measures for regeneration, (iv) improvement of young stands/tending, (v) fertilization and (vi) draining (both new and improvement of existing) are treated in this section, as they are all regulated by the same act.

Legislation

All silvicultural measures are regulated by

- (I) *Regulation on grants for silviculture and afforestation* (Ministry of Agriculture 15th of May 1991), replaced by
- (II) *Regulation on grants for silviculture* (Ministry of Agriculture 16th of May 1994, by authority of the Parliaments annual budget resolution), which was ended February 2004 and replaced by
- (III) *Regulation on grants for trade and environmental actions in the forest sector* (Ministry of Agriculture 4th of February 2004, by authority of the Land Act of 1995).

Background

Public support for silvicultural measures originates from approximately 1850 and was in the beginning mainly given to reforestation and afforestation measures. The first survey of Norwegian forest resources, performed by the National Forest Inventory in the 1920's, revealed that Norwegian forests were in an unsatisfying state. Interest in and political grounds for public financing of forestry, and especially silvicultural measures, were therefore strong. In 1932, Forest Protection Act was passed by parliament in an attempt to improve forest conditions.

Another important target of public support in forestry was employment, as unemployment became a growing problem in rural Norway in the post World War I-period. Concerns regarding unemployment only grew with the coming of the Second World War. After the war, Norway needed new industry and "to build up" the country and the economy. Forestry was an important part of this.

Objective(s)

The objective of the regulations for silvicultural measures has changed somewhat over the years. (I) aims at *securing a sustainable resource management by stimulating establishment and construction of forest*. In 1994 this was changed and (II) stated that its objective was to *stimulate establishment and construction of forest for production of quality timber*. Now, (III) should *based on local priorities and adaptations, stimulate increased added value in forestry while environmental values are maintained and developed*.

There are no specific goals stated in connection to these regulations.

Type of economic instrument

Grant

Measures funded

Under (I), a large group of measures are subject to funding: (i) Preparation of afforestation fields in afforestation areas, (ii) site preparation, (iii) reforestation, (iv) seeding, (v) clearing of broadleaves in reforestation fields, (vi) weeding, (vii) fencing, (viii) draining, (ix) fertilization, (xi) supplemental reforestation, (xii) supplementary work in afforestation/ reforestation fields, (xiii) young forest tending, pruning, (xiv) improvement of existing drainage and supplemental draining, (xv) forest planning and (xvi) administration costs (all measures subject to more detailed specifications).

Under (II), these measures are funded for establishment of forest: (i) preparation work for afforestation, (ii) ditching (necessary for reforestation), (iii) site preparation, (iv) planting and seeding (both natural and artificial), (v) fencing, fertilisation and (vi) prevention of rot. For tending, these measures are funded: (vii) supplemental reforestation and seeding, (viii) young forest tending and weeding, (ix) pruning and (x) clearing of existing drainage and supplemental ditching.

(III) supports tending of young forest and other quality enhancing efforts (not planting, seeding, chemicals, equipment or any efforts giving positive net income), construction or reconstruction of forest roads, covering of costs in relation to environmental constraints or considerations, timber transportation by cableway, and other (unspecified) forestry promoting efforts.

Characteristics and number of beneficiaries

(I) applies to all forest properties larger than 1 hectare and field size no less than 0.2 hectares. (II) covers all properties with a forest area larger than a hectare, and maximum sustained yield less than 3000m³ if situated in south-eastern counties or Aust-Agder. Under (III) all forest properties larger than 1 hectare are supported.

Financial and administrative inputs

Table 13 through Table 17 show public funds and total costs of silvicultural measures that are funded. All grants are distributed through the Forest Trust Fund.

Table 13. Public funds and total costs spent on measures in connection to reforestation, regeneration and supplemental reforestation. Million euros, 1999. Real prices. Data incomplete for 1991 and 1992.

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Plants										
Costs	8.675	9.328	7.411	7.479	8.350	8.203	7.418	7.945	7.151	6.916
Grants	2.720	3.048	2.064	2.545	2.431	2.278	2.053	2.700	2.338	2.043
Planting										
Costs	8.191	8.726	8.768	8.470	9.290	9.118	8.046	8.788	8.046	8.018
Grants	2.458	2.706	2.674	2.839	2.854	2.581	2.268	2.968	2.696	2.358
Seeding										
Costs	0.006	0.014	0.053	0.050	0.040	0.053	0.047	0.086	0.069	0.059
Grants	0.002	0.003	0.011	0.011	0.010	0.014	0.012	0.024	0.021	0.016
Supplemental reforestation										
Costs	0.577	0.795	0.870	1.247	1.076	1.197	1.040	1.118	0.983	0.787
Grants	0.208	0.297	0.273	0.515	0.374	0.425	0.392	0.446	0.408	0.311
Total cost	17.448	18.863	17.102	17.246	18.756	18.571	16.551	17.937	16.248	15.780
Total grants	5.389	6.054	5.022	5.910	5.670	5.298	4.725	6.138	5.462	4.728

Table 14. Public funds and total costs spent on preparation activities for regeneration. Million euros, 1999. Real prices. Data incomplete for 1991 and 1992.

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Clearing of fields										
Costs	0.725	0.735	0.579	0.459	0.425	0.402	0.336	0.344	0.293	0.290
Grants	0.164	0.206	0.155	0.151	0.099	0.073	0.063	0.108	0.099	0.103
Site preparation										
Costs	0.571	1.081	1.016	0.889	1.309	1.408	1.186	1.703	1.612	1.605
Grants	0.180	0.298	0.299	0.309	0.352	0.465	0.397	0.628	0.655	0.624
Chemical pre-treatment										
Costs	0.107	0.198	0.114	0.094	0.127	0.131	0.103	0.102	0.096	0.098
Grants	0.003	0.010	0.007	0.006	0.004	0.000	0.000	0.000	0.000	0
Fencing										
Costs	0.104	0.093	0.105	0.038	0.018	0.013	0.016	0.010	0.023	0.034
Grants	0.050	0.064	0.072	0.022	0.010	0.006	0.004	0.004	0.009	0.010
Removal of broadleaves										
Costs	0.091	0.106	0.050	0.112	0.097	0.097	0.094	0.104	0.078	0.048
Grants	0.090	0.104	0.047	0.110	0.098	0.095	0.074	0.103	0.077	0.044
Total cost	1.598	2.213	1.864	1.592	1.976	2.051	1.736	2.262	2.101	2.074
Total grants	0.486	0.683	0.580	0.599	0.562	0.639	0.539	0.842	0.840	0.782

Table 15. Public funds spent on supplemental treatment of reforestation fields and young forest. Million euros, 1999. Real prices. Data incomplete for 1991 and 1992.

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Mech. Treatment										
Costs	7.507	6.694	5.397	7.604	5.513	5.764	5.746	5.966	5.874	5.282
Grants	3.284	2.923	2.331	4.530	3.101	3.198	3.132	3.333	3.272	2.731
Chemical treatment										
Costs	0.830	0.628	0.535	0.397	0.445	0.516	0.460	0.373	0.297	0.300
Grants	0.002	0.004	0.001	0.001	0.000	0.000	0	0	0.000	0
Young forest tending										
Costs	2.338	3.028	2.848	4.661	3.679	4.823	4.161	4.773	4.553	4.619
Grants	0.780	0.822	0.762	2.022	1.246	1.664	1.502	1.971	1.908	1.860
Deficit on thinning										
Costs	0.069	0.093	0.071	0.034	0.053	0.037	0.028	0.017	0.030	0.027
Grants	0	0.000	0	0	0	0	0	0	0	0.001
Pruning										
Costs	0.031	0.126	0.213	0.864	0.423	0.409	0.261	0.340	0.337	0.328
Grants	0.000	0	0.062	0.379	0.175	0.165	0.120	0.154	0.178	0.169
Measures to prevent rot										
Costs	0	0	0	0.011	0.019	0.031	0.091	0.088	0.061	0.050
Grants	0	0	0	0.004	0.002	0.010	0.008	0.011	0.012	0.010
Promotion of environmental values										
Costs	0	0	0	0.001	0.021	0.007	0.012	0.056	0.065	0.025
Grants	0	0	0	0	0.020	0.005	0.003	0.032	0.018	0.005
Total cost	10.776	10.569	9.064	13.571	10.153	11.588	10.760	11.614	11.217	10.630
Total grants	4.066	3.749	3.156	6.936	4.545	5.043	4.765	5.500	5.388	4.775

Table 16. Public funds and costs spent on fertilizing. Million euros, 1999. Real prices. Data incomplete for 1991 and 1992.

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	
Bog land	Costs	0.353	0.468	0.271	0.293	0.258	0.201	0.097	0.145	0.154	0.071
	Grants	0.192	0.300	0.170	0.172	0.231	0.109	0.046	0.079	0.078	0.026
Firm ground	Costs	0.172	0.398	0.287	0.259	0.311	0.372	0.422	0.462	0.411	0.282
	Grants	0.037	0.050	0.041	0.034	0.036	0.036	0.020	0.057	0.026	0.043
Total cost	0.525	0.866	0.558	0.552	0.569	0.573	0.519	0.606	0.565	0.353	
Total grants	0.229	0.350	0.212	0.206	0.267	0.145	0.066	0.136	0.104	0.069	

Table 17. Public funds spent on draining. FTF = Forest Trust Fund. Million euros, 1999. Real prices. Data incomplete for 1991 and 1992.

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	
New drainage	Costs	1.596	1.424	0.905	0.730	0.532	0.378	0.284	0.337	0.295	0.185
	Grants	0.593	0.515	0.326	0.243	0.134	0.093	0.077	0.106	0.072	0.051
Suppl. Drainage	Costs	0.106	0.106	0.061	0.064	0.072	0.057	0.043	0.032	0.017	0.016
	Grants	0.040	0.028	0.012	0.020	0.018	0.015	0.008	0.005	0.002	0.004
Maintenance	Costs	0.371	0.569	0.474	0.535	0.442	0.400	0.349	0.353	0.312	0.384
	Grants	0.117	0.115	0.067	0.132	0.054	0.039	0.019	0.017	0.009	0.011
Total cost	2.073	2.098	1.439	1.328	1.045	0.836	0.676	0.723	0.624	0.585	
Total grants	0.751	0.658	0.405	0.396	0.205	0.147	0.104	0.128	0.083	0.066	

Program outputs

Table 18 displays relevant outputs for all silvicultural measures.

Table 18. Outputs for all silvicultural measures. N denotes number of units and A denotes area. Area in hectares and length in kilometres.

		1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Draining, new ¹	N	1,378	1,174	876	682	411	340	271	324	274	184
Suppl. draining ¹	N	86	84	54	56	53	45	33	25	12	13
Improv. drainage ¹	N	290	463	365	430	355	315	288	339	254	279
Fertilisation bog land	A	1,603	1,880	1,262	1,347	1,304	862	501	585	660	294
Fertilisation, other	A	1,925	1,982	1,490	1,437	1,438	2,110	1,863	1,979	1,755	1,298
Clearing	A	5,669	6,445	4,837	3,791	4,033	3,446	2,673	2,276	1,974	1,816
Site preparation	A	2,778	6,180	5,597	4,665	7,156	7,352	5,982	8,550	7,967	7,802
Chem. pre-treatment	A	483	876	626	555	646	649	512	476	419	444
Fencing	A	560	328	978	165	56	27	83	30	110	163
Removal of broadleaves	A	638	737	349	703	606	643	509	662	517	323
Purchase of plants ²	N	42,678	45,349	36,150	36,125	40,150	39,049	34,962	36,457	31,960	30,948
Planting ²	N	41,188	42,912	38,591	36,841	40,593	39,171	34,383	36,507	32,194	31,789
	A	20,726	21,874	20,441	18,990	21,793	21,097	19,860	19,746	18,087	17,715
Seeding	A	29	92	271	348	230	247	216	388	328	263
Christmas trees ²	N	-	-	-	-	615	695	701	717	618	440
	A	-	-	-	-	125	137	144	154	139	97
Ornamental greenery	A	-	-	-	-	3	3	6	7	8	11
Suppl. planting ²	A	215	302	334	473	420	455	392	413	333	277
	A	-	-	55	176	291	435	363	480	312	249
Suppl. mech. work	A	28,594	25,762	21,039	29,181	20,699	22,031	22,614	22,546	22,508	19,613
Suppl. chem. treatment	A	3,287	2,662	2,412	2,072	2,061	2,189	2,072	2,405	1,286	1,261
Young forest tending	A	8,890	11,421	11,236	18,304	14,168	18,273	15,308	17,054	16,151	15,933
Deficit on thinning	A	327	400	418	190	186	149	110	69	112	147
Pruning	A	80	366	553	1,960	992	931	694	879	817	875
Prevention of rot	A	-	-	-	108	189	392	1,193	1,083	551	421
Environmental values	A	-	-	-	0	6	151	6	63	10,354	1,192

¹ In kilometres.

² In thousands.

For the whole period, approximately 200 000 forest owners have received grants. There is at the present no information on how grants are distributed among forest owners, and thus no information on whether certain groups of forest owners have benefited more than others.

Program effectiveness

Evaluation of programme effectiveness cannot be performed, as there are no specific goals assigned to the program.

Programme efficiency

Some efficiency calculations are presented by Baardsen (1991) and Løyland, Ringstad and Øy (1995). Solberg (1995) gives an overview of the studies done until 1995.

3.3.3 Thinning

Legislation

- (I) *Rules for grants for initial thinning* (Ministry of Agriculture August 1992, by authority of the by-laws of the Agricultural Development Fund), replaced by
(II) *Regulation on grants for initial thinning* (Ministry of Agriculture 22nd of December 1993, by authority of the Parliaments annual budget resolution), replaced by
(III) *Regulation on grants for trade and environmental actions in the forest sector* (Ministry of Agriculture 4th of February 2004, by authority of the Land Act of 1995).

Background

Grants for (first) thinning started in 1985 through funds from the Agricultural Development Fund. There exists no legislation in connection to this. Although there is no written documentation, one of the reasons for establishing public support for thinning was to nurture professional environments for thinning, especially in afforestation regions (as stated under Objectives).

Objective(s)

In (I), no specific object is stated, while (II) wants to *stimulate thinning in afforestation regions* (northern and western parts of Norway).

No specific objective is set regarding area to be treated or volume to be harvested.

Type of economic instrument

Grants

Measures funded

Grants may be allowed for initial thinning in younger production forest when at least 0.2 m³/haa of utilisable roundwood is harvested. Grants are 90€/haa at the moment.

Characteristics and number of beneficiaries

Grants may be allowed in counties Finnmark, Troms, Nordland, Møre & Romsdal, Sogn & Fjordane, Hordaland, Rogaland, Vest-Agder and municipalities along the coastline of Trøndelag. This comprises approximately 55 000 forest owners.

Financial and administrative inputs

Table 19. Public funds spent on thinning¹. Thousand euros, 1999. Real prices. Data incomplete for 1991 and 1992.

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Grants	10,2	4,8	5,9	8,8	75,4	608,7	762,1	869,5	199,3	339,9	272,7	243,9	132,1

Program outputs

Data are incomplete, thus all numbers in Table 20 should be viewed as minimum estimations.

Table 20. Thinning¹. Hectares and m³.

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Roundwood,m ³	-	-	-	-	--	-	-	-	16,612	33,444	30,547	22,443	15,308
Area,ha	328	402	418	207	186	151	110	70	657	1258	991	897	591

¹ Data are not complete for the period 1991 to 1999.

Program effectiveness

No specific targets are stated, and thus effectiveness analysis cannot be performed.

3.3.4 Forest operations

Legislation

- (I) *Regulation on grants for forest operations in steep terrain* (Ministry of Agriculture 29th of November 1985), replaced by
- (II) *Regulation on grants for forest operations in steep terrain* (Ministry of Agriculture 6th of January 1993, by authority of the by-laws of the Agricultural Development Fund), replaced by
- (III) *Regulation on grants for forest operations in steep terrain* (Ministry of Agriculture 28th of April 1994, by authority of the Parliaments annual budget resolution), replaced by
- (IV) *Regulation on grants for trade and environmental actions in the forest sector* (Ministry of Agriculture 4th of February 2004, by authority of the Land Act of 1995).

Background

Public support of forest operations in steep terrain was established in 1977, mainly as a direct follow-up to a white paper on *Measures for increased harvests in forestry* (Ministry of Agriculture, 1974) where such a measure was suggested. It was supposed to be arranged so that it had a clear regional profile. Thus, it was in the beginning restricted to forestry regions with a weak business environment. The measure was extended in 1981, to cover all regions and all forest owner categories (Baardsen, 1991).

Objective(s)

- (I) -
- (II) shall *promote harvesting in steep terrain*, while (III) tries to *increase the forest sectors contribution in regional value adding through sustainable exploitation of roundwood resources in difficult terrain*. In (IV), *costs in relation to environmental constraints or considerations and timber transportation by cableway* are supported.

There are no specific goals as to area affected by this measure.

Type of economic instrument

Grant

Measures funded

- (I) -
- Both (II) and (III) supports *forest operations in steep and difficult terrain, or with especially high operations costs due to long in-forest transportation or a need for alternating operating*

systems. For “tractor” terrain exceeding a gradient of 60%, a maximum grant of 480€/haa or 7.2€/m³ is allowed. For “cable way” terrain, cable way lengths less than 150 meters gives a maximum grant of 480€/haa or 7.2€/m³ and cable way lengths more than 150 meters gives a maximum grant of 722€/haa or 8.4€/m³. For in-forest transport exceeding 2 km, a grant of 1.8€/m³ (maximum 3.6€/m³) may be given.

Under (IV), grants are allowed for timber transportation by cableway.

Characteristics and number of beneficiaries

(I) -

(II) and (III) applies to all forest owners, while (IV) only applies to forest properties larger than 1 hectare.

Financial and administrative inputs

Data are incomplete, thus all numbers in Table 21 should be viewed as minimum estimations.

Table 21. Public funds spent on and total costs of forest operations in steep terrain. Euros, 1999. Real prices. Data are incomplete for the entire period.

Data	1996	1997	1998	1999	2000	2001	2002
Grants	2,147	22,148	88,844	315,365	759,302	552,802	515,166
Total cost	-	-	-	152,983	2,557,249	1,775,125	1,839,683

Program outputs

Data are incomplete, thus all numbers in Table 22 should be viewed as minimum estimations.

Table 22. Forest operations in steep terrain. Hectares and m³. Data are incomplete for the entire period.

Data	1996	1997	1998	1999	2000	2001	2002
Roundwood	-	-	-	10,582	153,779	103,325	96,039
Area, hectares	-	-	-	191	1,063	636	713

3.3.5 Construction and basic improvements of forest roads

Legislation

(I) *Regulation on grants for construction of forest roads* (Ministry of Agriculture 30^h of November 1984), replaced by

(II) *Regulation on grants for construction of forest roads* (Ministry of Agriculture 28th of June 1994, by authority of the Parliaments annual budget resolution), replaced by

(III) *Regulation on grants for trade and environmental actions in the forest sector* (Ministry of Agriculture 4th of February 2004, by authority of the Land Act of 1995).

Background

The first public support for construction of forest roads was given in 1933 (Baardsen, 1991). Grants increased fast, from 50 000 NOK in 1933 to 800 000 NOK in 1939. The motivation was again partly employment measures. Later, public financing of forest roads has aimed at increased harvest.

Objective(s)

(I) and (II) states that its objective is to *ease transportation of roundwood, and provide forest access for rational silviculture and forest operations*. (III) states that it should, *based on local priorities and adaptations, stimulate increased added value in forestry while environmental values are maintained and developed*.

Type of economic instrument

Grants

Measures funded

(I) + (II) authorises funding for *construction and reconstruction of forest roads and skidder roads*, in so far as reconstruction of roads implies improving the road standard. Only road projects with costs exceeding 3000€ in forestry regions and 1800€ in coastal and mountain regions will normally release grants (II). In forestry regions up to 40% of total construction costs may be covered by grants. In coastal and mountain regions, grants may cover up to 60% of construction costs and in counties Nordland, Troms and Finnmark up to 75% of total construction costs may be covered by grants.

Under (III) all forest roads, except construction of roads in wilderness areas (more than 5km horizontal distance from existing technical installations) are funded. The road must be built in accordance with prevailing standards.

Characteristics and number of beneficiaries

All regulations cover all forest owners, but under (III) they are also subject to regulations set by the individual municipality.

Financial and administrative inputs

Total costs of construction and improvement of forest roads are shown together in Table 23. Grants have varied from 4.7 to 14.6 million euros. The total for the period is 92 million euros.

Table 23. Total costs of road projects receiving public support and public funds (grants) spent on construction of forest roads. Million euros, 1999. Real prices. Data incomplete for 1991 and 1992.

Year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Total costs	32.364	40.070	29.854	26.417	25.927	23.989	21.726	23.510	21.320	20.266	17.919	17.849
Grants	10.441	14.629	10.078	9.514	9.137	8.049	7.370	8.251	7.531	6.144	4.972	4.749

Program outputs

Approximately 83 000 forest owners have received public support construction of forest roads throughout the period 1991 to 2000. A little less than 81 400 forest owners built forest roads giving tax concessions in addition to direct support, while approximately 1800 forest owners received grants without tax concessions.

The annual length of constructed or improved roads receiving grants are shown in Table 24.

Table 24. Construction or improvement of all types of forest roads. Length, km.

Year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Length	2,780	2,937	2,311	1,801	1,833	1,578	1,355	1,208	1,455	1,014	1,191	1,083

3.3.6 Forest planning

Legislation

- (I) *Regulation on grants for forest planning* (Ministry of Agriculture 11th of January 1990, by approval of the by-laws of the Agricultural Development Fund), replaced by
- (II) *Regulation on grants for forest planning* (Ministry of Agriculture 22nd of April 1994), which was replaced by
- (III) *Regulation on grants for forest plans with environmental registrations* (Ministry of Agriculture 4th of February 2004, by authority of §§3 and 18 of the Land Act of 1995).

Background

Public financing of forest plans was established in 1971 (Baardsen, 1991). Originally, the main aim of support for forest plans was to increase the national harvest level. After a revision in 1980, resource inventory was apprehended as important also to enhance different forestry developing measures. Thus, a greater basis for public support was stated.

Objective(s)

All regulations state that they shall *stimulate [...] forest planning as a basic tool for [...] promoting a sustainable [...] forestry [...] with an active exploitation of forest and forest based natural resources.*

Type of economic instrument

Grants

Measures funded

Production of forest plans and resource inventories, as well as collection of information for these purposes (I+II). Courses aiming at follow-up of forest management plans may also be supported. (III) supports production of forest plans and resource overviews, and registration of information on forests and the environment in connection to this.

Characteristics and number of beneficiaries

(I) and (II) applies to all property types and all forest land, while (III) applies to all forest properties larger than 1 hectare of forest land or joint plans encompassing at least 1 hectare of forest land.

Close to 21 000 forest owners received support for forest plans during this period.

Financial and administrative inputs

Table 25. Total costs of forest plans and public funds (grants) spent on forest planning. Million euros, 1999. Real prices. Data incomplete for 1991 and 1992.

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Total costs	1.372	2.168	2.133	2.167	1.630	2.055	2.173	2.057	2.391	2.529
Grants	0.804	1.121	1.596	1.390	0.997	1.255	1.363	1.352	1.438	1.558

3.3.7 Transport subsidies

Legislation

- (I) *Regulation on transport subsidies for roundwood* (Ministry of Agriculture 17th of December 1985, by authority of the Constitution), replaced by
(II) *Regulation on grants for transportation of roundwood* (Ministry of Agriculture 11th of November 1993, by authority of the Constitution).

Background

Cost of transport is a major share of total industry cost of roundwood. The spatial properties of forest resources in Norway imply long distances of transportation for large parts of the roundwood that is traded. The grants for transportation in the forest sector is meant as a harvest promoting measure in areas where market conditions makes it difficult to find Norwegian buyers of roundwood.

Objective(s)

The goal of the transportation grant is to *stimulate the interest for purchase of roundwood from remote areas where costly transportation leads to a difficult market situation* (both I and II).

Type of economic instrument

Grants

Measures funded

Grants may be allowed for transportation of roundwood or secondary products from sawmilling, or investments that aim at a more rational and less costly transport.

Characteristics and number of beneficiaries

Counties Rogaland, Hordaland, Sogn & Fjordane, Møre & Romsdal, Nordland, Troms and Finnmark. Grants are paid directly to buyers of roundwood or secondary wood products from sawmilling or investors in infrastructure enhancing transport of roundwood.

Financial and administrative inputs

Table 26 Public funds spent on transport. Million euros, 1999. Real prices. Source: The annual budget of the Parliament.

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Grants	2.274	3.474	4.076	2.545	1.568	0.775	0.252	0.985	0.481	0.350	0.340

3.3.8 Investment grants

Legislation

Regulation on extraordinary investment grant (Ministry of Agriculture 9th of July 1993, by authority of §§ 41, 42 and 43 of the Forestry Act of 1965).

Background

During the autumn of 1992, exchange rates for Norwegian currency towards US dollars and major European currencies weakened markedly. This led to worsened competitiveness for Norwegian wood based industry. To counteract this situation, an investment subsidy for roundwood was established.

Objective(s)

The investment grant should influence [...] *the forest sector* [...] *in such a way that the level of operations is maintained at a sufficiently high level* [...] *in 1993*.

Type of economic instrument

Grants

Measures funded

All roundwood measured for sale in 1993, as well as roundwood measured for sale in 1992 but traded at 1993-prices. 27 NOK/m³ is paid for all roundwood measured between January 1st and March 27th and reported by 10th of August, while 20 NOK/m³ is paid for roundwood measured before 5th of November and reported by 17th of November. Also, up till 20 NOK/m³ is paid for roundwood measured before December 31st and reported by February 10th 1994. The grant is paid through the Forest Trust Fund, thus the usual rules for use of money from the Forest Trust Fund applies to this grant. Roundwood that is included in the scheme is excused from the duty to pay timber sales tax to the Forest Trust Fund, but forest owners may on a voluntary basis pay the timber sales tax (deducting 0-25% of gross value of the roundwood).

Characteristics and number of beneficiaries

All forest owners could receive support.

Financial and administrative inputs

Table 5. Public funds spent on investment grant. Million euros, 1999. Real prices.

	1993	1994	1995
Grant 27 NOK/m ³	9.915	0.093	0.001
Grant 20 NOK/m ³	12.817	3.516	0.002

Program outputs

In total, 30 474 forest owners received grants for 8 758 276 m³ of roundwood.

3.4 Tax concessions

3.4.1 Income taxation

There are several tax concession related to income taxation.

Certain measures financed through the Forest Trust Fund may give tax concessions. This applies to (i) silvicultural measures of various kind, (ii) improvement of forest roads and (iii) harvest promoting measures and investments in areas with restrictions on road construction.

Also, investment costs for silvicultural measures and road construction may be directly deducted in income stipulations. Under certain conditions, afforestation costs may also be deducted.

Legislations

(I) *Regulations on tax concessions on financing of certain measures by the Forest Trust Fund* (Ministry of Finance, 23rd of August 1983, by authority of the Tax Act of 18th of August 1911 no. 8), replaced by

(II) Regulations supplementing and for accomplishment of the Tax Act of 26th of March 1999 no. 14 (by authority of the same) where §8-2 regulates taxation of certain forestry measures.

Objective(s)

A white paper from the Ministry of Finance (MF, 1982) states that tax rules should *stimulate increased harvesting and contribute to activity and production in the forest sector*.

Mesures funded

The (present) Taxation Act §8-2 states that

- (i) public grants should not be declared for income taxation when they are used for depreciation of cost price for new and permanent constructions without corresponding deduction in stipulation of income,
- (ii) only 40% of monies from the Forest Trust Fund should be declared for income taxation when used for (a) silvicultural measures, (b) improvement of forest roads or (c) harvest promoting measures in areas with restrictions on construction of roads,
- (iii) monies from the Forest Trust Fund released for depreciable assets shall be deducted in the assets cost price,
- (iv) costs of silviculture and construction of forest roads may be deducted in income stipulations,
- (v) tax payers without forest or with forest not yet generating income in a municipality (in regions with no or little forest) may deduct costs of afforestation on own property that amounts to 10% or less of net income in that municipality.

Until the year 2000, tax concession under (ii) was not constant. Income was stipulated according to Table 27.

Table 27 Share of monies from the Forest Trust Fund declared for income taxation . Norwegian currency, NOK.

Total investments	Share for taxation
<50 000 NOK	65%
50 000 - 100 000 NOK	75%
100 001 - 500 000 NOK	90%
>500 000 NOK	95%

Total investments in silviculture and construction of forest roads can be found in section 3.3. Estimations of total amount of tax concessions are not performed here because they depend strongly on the marginal tax rate of the individual owner, of which we do not have any reliable statistics.

From 2003, there are no tax concessions for financing construction of new forest roads with the Forest trust Fund.

3.4.2 Wealth taxation on deposits to the Forest Trust Fund

Considerable capital is deposited in the Forest Trust Fund. Under *Regulations* () these reserves are exempted from wealth taxation. Total reserves in the fund can be found in section 3.2.4. Reserves are approximately 80 million euros (1999 exchange rate) at the moment.

Tax on wealth is paid both at the municipal and county level. Different tax rates apply to different levels. From Table 28 we can see that most normal forest owners with wealth exceeding 580 000 NOK will pay 1.1% in tax.

Table 28 Wealth taxation rates for different tax classes and levels of wealth. 2002. Source:

Level	Tax class ¹	Interval	Tax rate
Municipality	1 + 2	> 120 000 NOK	0,7 pst
County	1	120 000 - 540 000 NOK	0,2 pst.
		>540 000 NOK	0,4 pst.
	2	150 000 - 580 000 NOK	0,2 pst.
		>580 000 NOK	0,4 pst.

¹ Tax class 2 is for spouses being taxed as one person, while class 1 is all others.

Thus, a rough maximum estimate on tax concessions for reserves in the Forest Trust Fund is for the year 2002 approximately 800 000 euros.

3.4.3 Minor own consumption of wood

Consumption of wood to meet own needs in agricultural and forestry purposes is exempted from forest tax (deposits to the Forest Trust Fund). Forest properties that only covers own use of wood is not subject to average taxation together with income from forestry, but is taxed along with other income.

Exemptions are made under legislation and regulations concerning deposits to the Forest Trust Fund (see section 3.2). In the Tax Act of 1999, §14-81 states that *forest properties sufficient only to cover needs for own purposes in forestry or agricultural activities* should not be taxed as normal forestry incomes, i.e. average taxation, but together with other income the owner may have.

The stated regulations apply to all forest owners. Neither administrative inputs nor outputs are known.

3.4.4 Fair value estimation of forest property for taxation purposes

Legislation on wealth taxation for forest is explained in section 1.4.6. In general, a capitalisation rate of 10% is used for valuation of forest properties. Furthermore, the Tax Directorate states that net increment should be corrected before it is used for estimation of annual net income from the forest (Tax Directorate, 1989). The correction is done according to certain assumptions, and considers among other factors standing volume, actual increment in proportion to potential increment, and the forest share of younger production forest.

In sum, this leads to relatively low values of properties declared for taxation. No estimation of total tax concession is made here.

3.4.5 Forest property transaction price

Legislation concerning transaction of forest properties is regulated by the Concession act as explained in section 1.4.6. This applies to all property transactions. In general, the discount obtained on property prices by applying a relatively high capitalisation rate in estimating value of use, can be viewed as a subsidy for the buyer.

There exists no complete statistics on forest property transactions, and thus no estimate on tax concessions can be made.

3.4.6 Fair value estimation of forest property transfer within family

When properties are transferred between family members, the Concession Act does not apply. Such property transactions are regulated by the Allodial Law (see section 1.4.2). For properties with at least 2 hectares of agricultural land, or with land giving income comparable with that from 2 hectares of agricultural land, a special valuation is applied in cases of primogeniture.

§56 of the Allodial Act states that *the primogeniture inheritor has a claim to a value assessment that is reasonable according to his/her financial situation*. In §14 of the Act on tax on heritage and gifts (Anon., 1964), it is stated that for agricultural properties being transferred subject to primogeniture rights, *value is set to $\frac{3}{4}$ of assumed market price*.

We do not know neither administrative inputs nor outputs of this arrangement, as we do not have statistics on property transfers made according to the Allodial law.

3.4.7 Tax on profit from property sale

Profits on property sales should in general be subject to income taxation. However, if the property has been in the seller's possession more than 10 years, profits are exempted from taxation.

The Tax Acts §9-3 states that *profit on sale of agriculture or forest properties is exempted from taxation when the seller has had the property in his or her possession more than 10 years at the time of sale*. Furthermore, *for properties in the sellers' possession less than 10 but more than 5 years, a fifth of the profit is exempted from taxation for every year exceeding 5 years*. These regulations apply to all forest property transactions.

Neither administrative inputs nor outputs are known.

Profit tax on all property sales is expected introduced some time during 2005 or 2006.

3.5 Nature conservation

3.5.1 Governmental protection of forests

Background

Nature conservation, and protection of forests, has for the last decades become increasingly important. In Norway, approximately 1.68% of all forest land and 0.86% of productive forest land is protected (Framstad, Økland, Bendiksen, Bakkstuen, Blom & Brandrud, 2002). The government has in recent years increased the pace in the protection of forests.

In Norway, protection of forests for biodiversity conservation is mainly performed by the state expropriating private forest land or protecting already state owned forest. The prior is most common, as private forest land is dominating.

In 1981, a White Paper on “Conservation of Norwegian nature” (Ministry of Environment, 1981) was read and approved by Parliament, thus adopting a national plan for protection of coniferous forests. In 1988, suggestions for directions on performing protection of coniferous forests were presented. In 1995, a programme was assigned to the task of protection coniferous forests. Prior to this, all funds for forest protection were special budget allocations from the Ministry of Environment.

Legislation

Protection of forests is performed under authority of the Nature Conservation Act (Anon., 1970).

Objective(s)

The Nature Conservation Act states (§1) that *nature is in itself of national value and should be protected*. Thus, the objective is to protect nature.

Type of economic instrument

Land owners are compensated according to land value.

Financial and administrative inputs

Funds for forest protection are distributed via the Ministry of Environment and the Directorate for Nature Management. From 1995, all funds are from a special programme for the protection of coniferous forests in Norway.

Table 29 Compensations for forest protection. Million euros, 1999. Real prices. Source: Ministry of Environment, annual white paper on budget.

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Funds	3.980	9.031	24.458	2.947	8.591	5.129	3.235	4.904	5.647	2.298	4.055	2.786	6.413

The relatively high sums in 1992 and 1993 are probably a reaction to a White Paper (New national plan for national parks and other large protection areas in Norway; Ministry of Environment, 1991) and earlier agreements for protection or conservation.

3.5.2 The Living Forests project

Background

In addition to forest conservation and protection carried out by the state, Norwegian forest owners have together with environmental organisations developed a general system and set of rules for sustainable forest management, which in the end should lead to a certification system. The project is called Living Forest and was started in 1995. Living Forests is supported by the government. The system is connected to PEFC. The project ran through 1998.

Objectives

The project has two main objectives. First, *to help create Norwegian and international confidence in the raw materials from the Norwegian forest industry being based on sustainable and environmentally friendly Norwegian forest management*, and second, *to demonstrate the will and ability of Norwegian forestry to conduct long-term, sustainable resource management through R & D, competence building and information* (http://www.levendeskog.no/Engelsk_Default.asp).

Financial and administrative inputs

Living Forests had a total budget of NOK 30 million, or approximately 3.5 million euros, of which half was financed by forest owners and forest industries and the rest by the government (1.75 million euros).

Implementation analysis

The Living Forest project and the standards for forest management resulting from it, has been subject to evaluation in 2004 (Sverdrup-Thygeson, Framstad and Svarstad, 2004). The evaluation concludes that *the Norwegian forest certification system in many respects works well, and that it seems to have increased the focus on and the specific development of more sustainable forestry*.

3.6 Technical assistance

3.6.1 Forest (Extension) Service

There is a Forest Service both at the municipal and the county level. Funding for the Forest Service is granted from the Ministry of Agriculture on an annual basis.

Legislation

Section 2 of the Act on Forestry of 1965 (Anon., 1965), regards the Forest Service. §4 states that *the Forest Service is the municipality, the County Agricultural Board and the ministry under which the act governs*.

Objective(s)

The objective of the Forest Service is to enforce the forestry act.

Characteristics and number of beneficiaries

All forestry owners acting under the Forestry Act are also subject to the services of the Forest Service.

Financial and administrative inputs

No statistics have been available on the exact size of the Forest Service and normally the annual budget white paper from the Ministry of Agriculture only states total funding for agricultural (both forestry and pure agricultural) services at county and municipal level. However, from a White Paper (Ministry of Agriculture, 1991) we know the approximate ratio between the two offices. In general, the Forest Service takes $\frac{1}{4}$ of total input of labour. A total annual funding of approximately 78 million euros for all agricultural services, means that the Forest Service receives funding of approximately 20 million euros. This figure has decreased from somewhat above 20 millions at the start of the period to somewhat below 20 million euros at the end of the period.

3.6.2 Forest planning

Support for forest planning is given through the Forest Trust Fund, and is accounted for in section 3.3. Indirect support for forest planning is given by the Forest Service (previous section).

3.6.3 Forestry advisory and organisational services

The Forest Owners Association receives funding from the interest earned on the Forest Trust Fund. Legislation is explained under section 3.2.4. Table 30 displays funding for forest owners associations.

Table 30. Funding for forest owners association (FOA) from interest earned on the Forest Trust Fund. Million euros, 1999. Real prices. Data incomplete for 1991 and 1992.

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
FOA	1.046	1.497	1.651	1.351	0.899	1.045	1.502	1.224	1.574	1.924	1.820	2.055

3.7 Joint programmes for private and public forestry

3.7.1 Seed and plant production: the Norwegian Forest Seed Station and nurseries

Background

The Norwegian Forest Seed Station is, at the moment, a privately owned company aiming at providing forest seed for Norwegian nurseries. Until 1996 it was state owned.

The Forest Seed Station was established in order to secure provision of seed and thus enable production of seedlings for Norwegian forestry.

Objective(s)

The main objectives of the Norwegian Forest Seed Station are to provide seed and plants of high quality to the forest sector in Norway. The Forest Seed Station also has the main responsibility for the genetic conservation of seed resources in Norway.

Characteristics and number of beneficiaries

Eventually all forest owners buying seed or seedlings will benefit from the efforts of the Forest Seed Station.

Financial and administrative inputs

Allocation of public funds for the Norwegian Seed Forest Station is found in the annual Budget White Paper. For the first half of the 1990's, an annual amount of between 300 and 400 thousand euros were granted. After 1995, no explicit statistics on allocation for the seed station are available as the Forest Seed Station was transferred to the Norwegian Forestry Society.

Program outputs

Figure 7 shows the number of seedlings produced and sold by Norwegian nurseries. The production of seedlings is made possible by the production of seeds by the Norwegian Forest Seed Station.

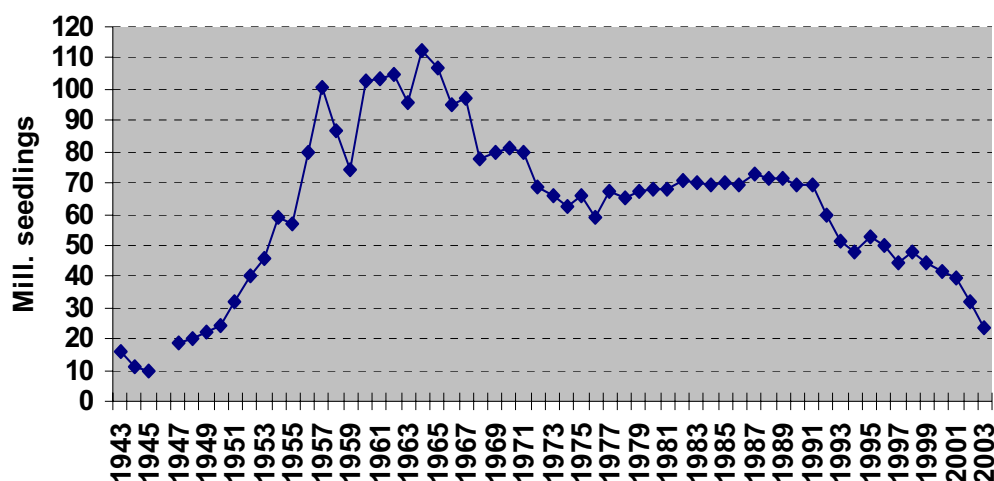


Figure 7 Total number of seedlings delivered from Norwegian nurseries.

3.8 Other direct and indirect measures

3.8.1 Information, courses and training

Under *Regulations on management and use of interest earned from the Forest Trust Fund* (see section 3.2 for details), interest earned on the Forest Trust Fund may be utilised for informational services, courses and training of forest owners and forestry professionals.

Table 31 Expenses for courses and informational services on local and regional level financed by interests earned on the Forest Trust Fund. Million euros, 1999. Real prices. Data incomplete for 1991 and 1992.

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Local										
Information services	0.423	0.599	0.660	0.597	0.552	0.492	0.482	0.467	0.464	0.501
Forest plans	0.234	0.279	0.333	0.243	0.261	0.222	0.126	0.139	0.124	0.215
Regional										
Information services	0.125	0.214	0.267	0.228	0.218	0.241	0.183	0.178	0.170	0.183
Forest plans	0.023	0.024	0.021	0.008	0.034	0.013	0.002	0.002	0.000	0.003

3.8.2 Direct contributions to projects

Under *Regulations on management and use of interest earned from the Forest Trust Fund* (see section 3.2 for details), interests collected from the Forest Trust Fund can be used for support of projects that *promote forestry*. Means used in this respect at local and regional level are shown in Table 32.

Table 32 Direct contributions for projects on local and regional level financed by interests earned on the Forest Trust Fund. Million euros, 1999. Real prices. Data incomplete for 1991 and 1992.

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Local										
Grants	0.268	0.245	0.184	0.200	0.122	0.158	0.135	0.131	0.127	0.144
Projects	0.587	0.658	0.671	0.422	0.335	0.300	0.322	0.402	0.328	0.344
Other	0.347	0.332	0.472	0.377	0.258	0.290	0.306	0.257	0.273	0.324
Regional										
Grants	0.211	0.665	0.393	0.297	0.281	0.244	0.262	0.221	0.273	0.286
Projects	0.245	0.315	0.319	0.231	0.104	0.186	0.226	0.216	0.185	0.253
Other	0.084	0.122	0.106	0.083	0.078	0.075	0.088	0.071	0.051	0.067

3.8.3 Contributions to organisations and institutions

Under *Regulations on management and use of interest earned from the Forest Trust Fund collected by the Ministry of Agriculture* (see section 3.2 for details), interests collected from the Forest Trust Fund by the MA can be used for support of *national organisations and institutions that actively work to promote interest for forestry or development of forestry*.

Characteristics and number of beneficiaries

Several organisations have received support from interest collected from the Forest Trust Fund during the period 1990 to 1999. There are no readily available data on this. In the annual Budget White Paper from the Ministry of Agriculture, only those receiving direct grant from the ministry are stated. These are the Norwegian Forestry Society (appr. 70 – 100 thousand euros), the Foundation for the Norwegian arboretum-Milde (appr. 45 – 60 thousand euros), Women in Forestry (appr. 20 – 5 thousand euros, substantially more in 1991 and 1992) and the Norwegian Nursery Organisation (appr. 10 thousand euros). The Budget White Paper for 1996, states that the Norwegian Forestry Society received appr. 300 000 euros from the interests collected from the Forest Trust Fund. This is probably representative of the normal annual allocations of funds for the society.

Financial and administrative inputs

The total amount of funds collected by the Ministry of Agriculture from the interest from the Forest Trust Fund, is seen in Table 11. However, the funds stated in Table 11 are used also for other purposes, such as covering costs of administration, information campaigns etc.

3.8.4 Investment loans for forest roads

Legislation

- (I) *Regulation on investment loans for forest roads* (Ministry of Agriculture 15th of March 1989 by approval of the by-laws of the Agricultural Development Fund, by authority of §2-2 in Law of 5th of February 1965 on the State Agricultural Bank and Royal Resolution of 23rd December 1983 no. 1851), replaced by
- (II) *Regulation on investment loans for forest roads* (Ministry of Agriculture 27th of June 1994 by authority of the Constitution). Repealed on 29th of December 2000, by authority of Regulations on repeal of regulations administered by the Forestry Section in the Ministry of Agriculture (Ministry of Agriculture 29th of December 2000 no. 1625)

Objective(s)

The investment loans should *stimulate construction of forest roads* [...] (both I and II).

Type of economic instrument

Loans free of interest rate, with a grace period of three years.

Measures funded

Forest road construction projects.

Characteristics and number of beneficiaries

Projects that exceed total costs of 50,000 NOK and does not receive governmental grants.

Financial and administrative inputs

No reliable and complete statistics have been available for this report.

Program outputs

No reliable and complete statistics have been available for this report.

3.9 Summary

The following table gives a summary of the economic transfer to forestry as far as it is documented in chapter 3 of this report. It should be emphasized that (i) investment loans given by the Agricultural Bank and (ii) tax concessions are not included in the table because of lack of data.

Table 33 Summary of financing of forestry in Norway. Million euros. Real prices, 1999. FOA = Forest Owners Association.

	1991 ¹	1992 ¹	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Silviculture ²	12.2	11.7	9.6	14.4	11.6	11.4	10.3	12.9	11.9	10.5	8.7	6.5
Forest plans	1.0	1.5	1.8	1.7	1.1	1.4	1.5	1.7	1.8	1.8	1.7	1.7
Roads	10.3	14.6	10.1	9.5	9.1	8.0	7.4	8.2	7.5	7.1	6.3	6.2
Invest. Support			22.7	3.6								
Various	0.1	0.2	0.4	0.2	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.1
Forest operations									0.3	0.8	0.6	0.5
FOA ³	1.0	1.5	1.7	1.4	0.9	1.0	1.5	1.2	1.6	1.9	1.8	2.1
Info. and courses ³	0.8	1.1	1.3	1.1	1.1	1.0	0.8	0.8	0.8	0.9	0.9	1.1
Projects ³	1.7	2.3	2.1	1.6	1.2	1.3	1.3	1.3	1.2	1.4	1.4	1.5
FTF	27.2	32.9	49.6	33.4	25.1	24.2	22.8	26.2	25.2	24.5	21.4	19.6
Forest Service ⁴	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Organ. and inst. ⁴	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Seed station ⁴	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Transport ⁵	2.3	3.5	4.1	2.5	1.6	0.8	0.3	1.0	0.5	0.4	0.3	
Forest conservation	4.0	9.0	24.5	2.9	8.6	5.1	3.2	4.9	5.6	2.3	4.1	2.8
Estimations	27.1	33.4	49.4	26.3	31.0	26.8	24.3	26.7	27.0	23.5	25.2	23.6
Stip. TOTAL	54.3	66.3	99.0	59.7	56.1	51.0	47.2	52.9	52.2	48.0	46.7	43.2

¹ Data are incomplete for 1991 and 1992.

² Contains all measures related to silviculture, such as reforestation, tending, chemical and mechanical treatment, pruning, draining, fertilisation etc. See section 3.2.2 for more details.

³ FOA, Information and courses and Projects are financed by interests earned on the Forest Trust Fund. See section 3.2.4.

⁴ Estimations.

⁵ Support for transportation of roundwood, paid to buyers of wood (see section 3.3.7)

The annual public transfers to the forest sector has for the period from 1991 to 2000 been approximately 59 million euros¹² on average. Of these, 21 million euros are estimations of financing of the Forest Extension Service, the Forest Seed Station and various other organisations. 25 to 30 million euros are annually distributed via the Forest Trust Fund. Deposits to the Forest Trust Fund have yielded an interest of from 4 to 9 million euros. This interest is redistributed via local, regional and national (Ministry of Agriculture) authorities.

Grants and indirect technical assistance has on average annually been 33 million euros (330 million euros in total). Of these, 11.6 million euros goes to silvicultural related work, with reforestation as the main silvicultural investment. Annual grants for construction of roads are

¹² As elsewhere: Real prices in 1999-currency. Deflated/inflated with consumer price index and converted with exchange rate 8.3101 NOK/Euro.

approximately 9 million euros. Forest plans are annually supported with 1.5 million euros. Grants covered in all cases around 1/3 of the total costs. Annually, some 3.8 million euros from the interest earned on the fund is redistributed as funding for projects (1.5 mill. euros), informational services and courses (0.9 mill. euros), and the Forest Owners Association (1.4 mill. euros). For the years 1993 and 1994 (22.7 and 3.6 million euros respectively), a temporary investment support was granted because of difficult market situations.

Forest Service, i.e. public technical and administrative support, is estimated to approximately 20 million euros annually. This is the cost of administration at both the municipal and regional level. Funds are mainly allocated for advisory services and estate-level planning, and partly for administration of the Forest trust Fund.

Public funding for conservation and protection of forest land amounts to 70 million euros in total. Funds are mainly spent for establishing conservation areas on private land according to the Nature Conservation Act.

The annual public support for the Norwegian Forest Seed Station is estimated to 400 thousand euros. The Living Forest project has received approximately 1.75 million euros in public support.

4 Discussion and conclusions

The findings documented in this report should be seen in light of the study limitations stated in chapter 2.3.

Although several aspects have not been possible to include in this study, it is clearly seen that the financial support to forestry in Norway has changed rather much the last decades – both regarding size, direction and types of support. It is a clear tendency to reduce the government support to timber production and harvest costs (planting, road building, subsidies for harvesting in steep terrain, etc.) and stimulate more environmentally oriented operations, as well as reducing the total direct financial support.

It is striking how few analyses have been done either on the effectiveness or efficiency of forest policy means in Norway. Baardsen (1991) and Framstad (1999) are the only giving analyses for the whole country, whereas Løyland, Ringstad and Øy (1995) gives analyses for one specific county. Solberg (1995) gives a more general overview of the evaluation studies done prior to 1995.

With the data documented in this report it seems possible to do a more thorough analysis than before on the impacts of various forest policy means in Norway.

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