

ECONOMICS OF FOREST USES IN FINNISH LAPLAND

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SELOSTE:

LAPIN METSIEN KÄYTTÖMUOTOJEN TALOUDELLINEN MERKITYS

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The object of the study is to give a tentative indication of the realized economic significance of the principal forest (forestry land) uses in Finnish Lapland. The data concern the 1970's. Timber harvesting generates a major part of the total value of production. Recreation (tourism) is in second place. Reindeer husbandry, the collection of berries and mushrooms and hunting together produce, in the best years, an output value which is about one fifth of that of timber harvesting. Non-timber uses together produce a significant portion of the total value of the integrated forestry output.

1. INTRODUCTION

In multiple-use forestry it is important to obtain insight into the economic importance of different forest uses as well as into the value of total output of integrated forest uses. Such information is needed for comparisons between single-use and multiple-use forestry and for resource allocation in forest management.

Forest production is noted for a diversity of goods and services. The forest products are different from each other not only physically but also economically. Some of them are marketable and have market prices, whilst some products, e.g. many game species, are not marketable in Finland but can be evaluated by using calculated prices. Recreation is an example of the forest uses that are somewhat difficult to evaluate in economic terms. However, many alterna-

tive methods have been presented for estimating recreation values (e.g. CLAWSON & KNETSCH 1966).

There are also some forest benefits the evaluation of which can be regarded as still more difficult, in spite of the fact that they certainly have some use value to both individuals and society. Such forest benefits are, for instance, amenity values and nature protection areas (e.g. GRAYSON 1972). However, due to lack of information they are left outside this study. Here only those forest uses are considered to which direct economic significance can be related comparatively easily.

The study has been carried out at Rovaniemi Research Station of the Finnish Forest Research Institute.

Many authorities, organisations, firms and specialists have given data and information. Mr. Seppo Lohiniva and Miss Kaija Sälevä assisted in data compiling.

Prof. Lauri Heikinheimo, Prof. Päiviö Riihinen, and Aimo Juhola, B.Sc.(For.), have read the manuscript. Ashley Selby, B.Sc., checked the translation.

2. STUDY OBJECTIVE AND MATERIAL

The objective of the study is to outline the economic importance of the principal forest (forestry land) uses in Finnish Lapland. The uses concerned are harvesting of timber, collection of berries and mushrooms, hunting, reindeer husbandry and recreation. The study area is the county of Lapland in Finland. It belongs to the northern part of the boreal coniferous forest zone including the forest limit in its northernmost part (Figure 1).

The total forestry land area of the county of Lapland is 9 190 000 ha, of which forest land 4 980 000 ha, poorly productive land 1 919 000 ha, waste land 2 273 000 ha and roads, deposits etc. 18 000 ha (National...). Peat lands comprise about one third of the total forestry land area. The state owns about two thirds of all forestry land. The population of Lapland is 196 000 persons.

The material for this study was compiled from many sources. It is partly from official statistics and partly from statistics of some non-governmental organisations. A part of the available material was collected and prepared for this study.

Data are for different years in the 1970's. Because of the defectiveness of the basic material some characteristics are presented only for some years. Value data are given at current prices.

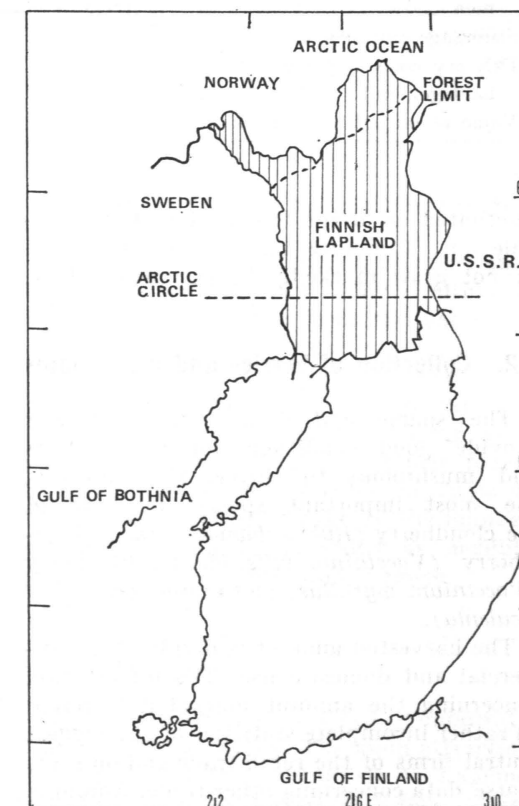


Figure 1. The study area.

3. CHARACTERISTICS OF FOREST USES

3.1. Harvesting of timber

In Lapland wood forms the most important natural resource and the forest industry is the dominant branch of secondary production.

The production and harvesting of timber includes both commercial logging and logging for household use. The output value of

harvesting consists of the stumpage earnings and the costs of logging and haulage, i.e. the delivery value of the timber. The basic materials for calculating the output value of harvesting have been stumpage prices of private forests, unit costs for the timber delivered from state and private forests and logging statistics (see Appendix).

The total drain in Lapland has earlier

Table 1. Characteristics concerning harvesting in the 1970's

Characteristic	Year						
	1970	1971	1972	1973	1974	1975	1976
Commercial fellings, 1 000 m ³ ...	5087	5043	4213	3210	3546	3309	3542
Labour force in commercial fellings, men	6933	5242	4571	4608	4808	4533	4425
Stumpage earnings, mill. Fmk	73	83	76	85	180	176	169
Delivery costs (logging and haulage), mill. Fmk	80	82	79	67	90	101	123
Value of output, mill. Fmk	153	165	155	152	270	277	292

fluctuated at about the level of the allowable cut. Therefore the volume of cutting cannot grow markedly in the near future.

3.2. Collection of berries and mushrooms

The sparse and light northern forests provide good conditions for wild berries and mushrooms to thrive. Economically, the most important species in Lapland are cloudberry (*Rubus chamaemorus*), whortleberry (*Vaccinium vitis idaea*), blueberry (*Vaccinium myrtillus*) and morel (*Gyromitra esculenta*).

The harvested amount is divided for commercial and domestic use. The information concerning the amount marketed is based on rather incomplete statistics of the biggest central firms of the retail trade and on some sparse data concerning other trade. Amounts for home use are poorly known. Only from

1971 some overall estimate is known (see Appendix). It is possible that the value of collected berries and mushrooms is therefore somewhat underestimated. Characteristics of collection of berries and mushrooms are presented in Table 2.

It must be pointed out that the value of the berries and mushrooms production mean only the harvested amount. The real yield of berries and mushrooms in forests and moors is manifold. Therefore one has good possibilities to increase the value of the harvested production in favourable years.

3.3. Hunting

Hunting in Lapland nowadays is almost solely done for a domestic use and recreation purposes. As a source of livelihood it is carried on only in a minor degree. The value of production is arrived at in the following

Table 2. Characteristics concerning collecting berries and mushrooms in the 1970's

Characteristic	Year						
	1970	1971	1972	1973	1974	1975	1976
Marketed ¹ cloudberry, 1000 kg ...			73	324	35	1	376
Marketed ¹ whortleberry, 1000 kg ...			495	251	54	273	1000
Marketed ¹ blueberry, 1000 kg			37	70	50	204	54
Marketed ¹ mushrooms, 1000 kg			1	11	14	5	1
Home use, kg per person		9					
Value of output, mill. Fmk	16		7	12	6	14	31

¹ Via central marketing organisations

Table 3. Characteristics concerning hunting in the 1970's

Characteristic	Year						
	1970	1971	1972	1973	1974	1975	1976
Number of hunters	16520	16944	20245	24367	25167	24814	24999
Tetraonids, in 1000's	74	66	101	178	129	44	
Fur game, in 1000's	53	46	42	47	64	40	
Elk	—	—	706	724	751	839	905
Value of catch, mill. Fmk	2	3	6	8	8	6	6*

* Preliminary figure

way: the quantities of bagged game are multiplied by calculated prices. Only some game go to market. The amount of bagged game is adequately known only in elk hunting. In other cases it is estimated on the ground of catch announcements by some of the hunters (see Appendix). Characteristics concerning hunting are presented in Table 3. The data refer to forest game only.

As a rule it is assumed that the game resources of Lapland are rather keenly utilized and no marked increase in production in the short run hardly can be expected.

it is largely located in the area where timber is being produced.

The value of production in reindeer husbandry is satisfactorily known although some inaccuracies arise from the nature of production (see Appendix).

The reindeer year is not a calendar year. In this paper the value of production is simply attributed to that calendar year where most production has taken place.

Characteristics are presented in Table 4. Chances for raising markedly the number of reindeers can be regarded as negligible because of the limited winter range.

3.4. Reindeer husbandry

The whole area of Lapland (excluding the most southwestern communes) belongs to the reindeer pasture area. A particular feature of the Finnish reindeer husbandry is that

3.5. Recreation

Tourism in Lapland is a rather important branch of the economy. The main attraction for native and foreign tourists to Lapland is nature with its forests and fells. There are two tourist seasons. In winter time

Table 4. Characteristics concerning reindeer husbandry in the 1970's

Characteristic	Year						
	1970	1971	1972	1973	1974	1975	1976
Number of reindeers, in 1000's ...	98	114	122	89	90	95	
Number of slaughtered reindeers, in 1000's	37	40	43	28	23	26	30*
Working days, 1000 man days ...	230	240	240			120	
Value of output, mill. Fmk	9	10	12	9	11	14	17*

* Preliminary figure.

Table 5. Characteristics concerning tourism in the 1970's

Characteristic	Year						
	1970	1971	1972	1973	1974	1975	1976
Number of beds in professional tourist accommodations		4041	4667	4634	5216	5691	5865
Number of nights at the accommodation facilities, in 1000's		322	391	437	494	557	532
Estimated number of tourists, 1000 persons					550		
Total income from tourism, in mill. Fmk			69		100	100*	100*

* See Appendix

tourists come to ski especially to the fell areas. In summer and in autumn driving, camping, hiking and fishing are the most popular activities.

Accommodation statistics provide information concerning the capacity of professional tourist accommodation and their utilization. These statistics, however, covers only about a half of all accommodation capacity and besides that there are many tourists (hikers for instance) who do not use any lodging services. Therefore only rough estimates for some years can be given for the total number of tourists as well as

for the total income from tourism (see Appendix). Some characteristics concerning tourism are presented in Table 5.

The direct income from tourism, of course, is not the same as the value of recreational benefits of forestry land. This very complicated problem is omitted here. Suffice it to say that in Lapland the nature is the major basis for tourism.

The number of tourists arriving in Lapland is expected to continue to grow in the future, although at a somewhat slower rate than before.

4. OUTPUT VALUES OF THE INTEGRATED FOREST USES

The above mentioned uses of forestry land in Finnish Lapland are organised mainly on the multiple use principle. Nearly all of the forestry land in Lapland is utilized by timber harvesting, hunting, reindeer husbandry, collecting of berries and mushrooms and recreation. Of course some areas are more important for certain uses than others. The comparative weights of different uses also vary in different land classes and vegetative zones. However, every use has, in principle, free access to most forestry land. The most important exceptions are restricted harvesting in the protection forest zone and prohibited harvesting and hunting in national parks.

The values of output of different forest

uses in Lapland are presented in Table 6. These output values are approximate for reasons described in the foregoing and in the Appendix. It must also be pointed out that these output values are not quite commensurate: some are based on market prices others on calculated prices. In addition, recreation output differs essentially from the concept of output of the others. That makes it difficult to compare with others.

For all that it can be supposed that they give a tentative indication of the present realized economic significance of different forest uses in Lapland.

Harvesting timber generates a major part

Table 6. The values of output of different forest uses in the 1970's in Lapland

Forest use	1970	1971	1972	1973	1974	1975	1976
	Mill. Fmk, current prices						
Harvesting of timber	153	165	155	152	270	277	292
Hunting	2	3	6	8	8	6	6*
Reindeer husbandry	9	10	12	9	11	14	17*
Collection of berries and mushrooms	16		7	12	6	14	31
Recreation (tourism) ..			69		100	100**	100**

* Preliminary figures

** See Appendix

of the total value of production. Recreation no doubt is in second place, irrespective of the conceptual difficulties relating to its output evaluation. Reindeer husbandry, collection of berries and mushrooms and hunting together produce, in the best years, a value of output which is about one fifth of that of timber harvesting. This means the situation at the provincial level. At the local and site type level it varies very much, of course.

It can be said that in the conditions of Finnish Lapland the non-timber uses of forests (forestry land) produce a rather significant portion to the total value of the integrated forestry output.

Finally, it must be pointed out, that the output value is not the only measure of the social importance of forest use.

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APPENDIX. MATERIAL AND CALCULATION BASIS

Harvesting of timber: The stumpage prices in private forests by counties are presented annually in Yearbook of Forest Statistics. In this study these prices are also used for timber removed from the forests of the National Board of Forestry. Unit costs for the timber delivered from the forests of the National Board of Forestry are from the operational statistics of the National Board of Forestry, which are also published in the Yearbook of Forest Statistics. Unit costs for the timber delivered from other (mainly private) forests are from the annual reports of the District Forestry Board of Lapland. Logging quantities are from the statistics of commercial fellings compiled by the Ministry of Labour and from the operational statistics of the National Board of Forestry. The share of timber used domestically is assumed to be the same as that estimated for 1972 by UUSITALO (1976, 37).

Collection of berries and mushrooms: The estimated domestic use of berries and mushrooms in the 1971 Household Survey in northern Finland is used here also for other years although it is probable that domestic use will vary with the yields of different years. The amounts marketed in the years 1972–74 are less completely known than for the last two years. The output value for 1970 is a calculated rough estimate of regional accounting.

Hunting: The annual catch announcements are filled only by about a fifth of the hunters. It is assumed here that the total catch is double the amount declared in the catch announcements.

The unit prices of game are calculated annually for national accounting by the Game Division of the Finnish Game and Fisheries Research Institute.

Reindeer husbandry: An inaccuracy in estimating the value of output of reindeer husbandry is due to the domestic use of reindeer meat. Here the estimate presented by JAUHAINEN (1974, 110) is used. In a recent study AIKIO (1977, 12) reports a decrease in domestic use. The number of working days in reindeer husbandry is not exactly known. According to the annual reports of Paliskuntain Yhdistys (Association of reindeer organizations) it can be estimated that the number of working days in the beginning of the 1970's has been 230–240 000 man-days. According to AIKIO (1977, 16) the labour input has decreased mostly due to mechanization to 120 000 man-days in 1975. It is possible, however, that this excludes some work concerning artificial feeding in corals.

Recreation: The estimated total income from tourism refers to tourists' expenditures inside the county of Lapland. It is obtained by the following formula: number of tourists x average length of stay x average expenditure per day. The total income from tourism in 1975 and in 1976 is assumed to be the same as the estimate for 1974, which was a result of a special study (Kehitysaluerahasto 1975, 13). The number of tourists during the last two years has remained roughly the same as in 1974 (Matkailun . . .). The effect of an inflation is here neglected, which could cause some underestimation. The estimated income from tourism of 1972 is taken from VANHALA (1975, 69).

SELOSTE:

LAPIN METSIEN KÄYTTÖMUOTOJEN TALOUDELLINEN MERKITYS

Tutkimuksessa on tarkasteltu Lapin (Lapin lääni) metsien keskeisimpien käyttömuotojen taloudellista merkitystä 1970-luvulla. Mukana ovat vain ne käyttömuodot, joilla on välitön taloudellinen merkitys. Aineisto on kerätty monista eri lähteistä. Perustiedot ovat eräiden käyttömuotojen osalta puutteelliset, joten tulokset ovat lähinnä suuruusluokkaa osoittavia. Lapin metsien (metsätalouden maan) kokonaistuotannon arvosta puun korjuun osuus on suurin. Virkistys on seuraavalla sijalla.

Virkistykseen arvoa on kuvattu matkailutulon avulla, joten se käsitteellisesti ei ole täysin vertailukelpoinen muiden käyttömuotojen kanssa. Poronhoito, marjastus ja sienestys sekä metsästys tuottavat parhaina vuosina noin viidenneksen puuntuotannon arvosta. Kokonaisuudessaan muut käyttömuodot kuin puuntuotanto tuovat varsin huomattavan lisän Lapin metsien kokonaistuotannon arvoon.