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N. A. OSARA

SOME TRENDS IN WORLD FORESTRY WITH RESPECT TO FINLAND

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N. A. Osara

SOME TRENDS IN WORLD FORESTRY WITH RESPECT TO FINLAND

Eräitä metsä- ja puutalouden kehitysilmiöitä maailmassa ja Suomessa

FOREWORD

This paper is based on a talk which the writer was invited to give in February 1972 in New York on the occasion of the annual gathering of the "Survivors Club", a group of North American and Finnish professionals from the pulp and paper industry.

Matters discussed afterwards included questions about the labour situation in Finnish forestry. A section dealing with this topic has been added.

Helsinki, May 18, 1972.

N. A. Osara

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TIIVISTELMÄ

Käsillä oleva julkaisu sisältää esitelmän, jonka tekijä helmikuussa 1972 piti New Yorkissa. Sen tarkoituksena oli antaa kuulijakunnalle, joka koostui pääasiassa USA:n ja Suomen massa- ja paperiteollisuuden johtomiehistä ja insinööreistä, tiivistetty kuva eräistä tämän hetken ongelmista maailman metsä- ja puutaloudessa. Sopivilta osilta asetetaan Suomen vastaavat ongelmat tätä laajempaa taustaa vastaan. Loppuun on lisätty metsätyöväen kysymyksiä käsittelevä kappale, joka ei sisältynyt alkuperäiseen esitelmään.

Alaotsakkeina voidaan luetella: maailman metsien nykyinen käyttö ja puun asema kilpailijoihin nähden; metsävarojen luonne ja riittävyys; metsäteollisuuden rakennemuutokset; kansainvälisen tavaranvaihdon kasvu; tilanne Euroopan metsä- ja puutaloudessa; hintojen ja kustannusten kehitys; kehitysmaiden mahdollisuudet; pohjoisen pallonpuoliskon luonnonmetsät ja Suomen niistä saamat kokemukset; Suomen metsävarojen riittävyys; tilanne metsätyöväkeen nähden.

The most striking trend in world forestry over the last two or three decades is no doubt the rapid growth in the consumption of wood and wood-based products. This is associated with two major factors: population increase and acceleration in rates of economic growth. But it is also due to technological changes which have resulted in new types of products and in the improvement or new application of existing ones. Another line of progress is that a much wider range of wood is now accepted as industrial raw material.

At the same time, wood has had to face stiff competition from other materials such as metals, concrete and plastics. Once it was believed that wood, in several quarters, had more or less lost the battle. More recent experience shows, however, that this has been to hasty a conclusion. Technological progress has worked extensively in favour of wood and wood fibre, and at present they are even recapturing lost positions.

There is also a somewhat newer type of competition worthy of note. Many of the more traditional wood products are encountering increasing competition from wood itself, i.e. from wood converted into entirely new forms. Let us only think of wooden crates and how they have been replaced by corrugated products, or of the manifold uses of wood-based panels, of which different types substitute for each other. Such a flexible range of alternatives no doubt creates an improved position for the basic material itself.

One particular outcome of these technological advances is that by now more than one third of all industrially used wood is peeled or disintegrated before it is reconstituted into products. From the point of view of sound forest practices and complete utilization of available wood, this trend has been of great importance. It has also promoted the highly desirable concept of integrating forests and industries through joint overall planning and management. It is hardly an exaggeration to claim that forest industries in Finland have been among the earliest pioneers in this type of integration.

We can sum up what we know about world consumption of wood for industrial purposes by looking at the FAO statistics, according to which this consumption in 1950 was 800 million cubic metres (corresponding to 28 billion cubic feet). In 1969 the figure was 1000 million m^3 (35 billion cu.ft.), while the forecast for 1975 is 1500 million m^3 (53 billion cu.ft.).

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These figures primarily serve to emphasize what the obvious question for world forestry must be: Can these vast and ever increasing quantities of wood be found? The answer should be: Yes, the task is not impossible. Statistically the world average for annual timber removals is still modest, extensive virgin resources remain unutilized, and a sizeable potential remains for further expansion of plantation forestry.

The geographical distribution of forest recources, however, is extremely uneven. In several of the most heavily populated countries, not to speak of desert regions, the possibilities for setting aside extensive areas for timber production are negligible; at the same time, the same time, the greatest untouched forest reserves are located very far from population concentrations. The same can be said also of many regions having the greatest potential for new plantations.

A more appropriate formulation of our question is therefore: Will it be possible to develop international trade in timber and wood-based products on such as scale as to cover ragional and national deficits? And will the surplus areas be able to offer their supply without too high a cost?

The indications are that this will be possible. The concept of global distances is no longer the same as it was some decades ago. Modern techniques help to move economically even such bulky and inexpensive materials as raw wood — maybe in the shape of chips — over the seven seas; this says nothing of finished

Table 1. World production and export of major wood-based products (FAO Statistics)

		1950	1955	1960	1965	1969	Volume index 1969 1950 = 100
Sawn coniferous lumber	Production, mill.m^3	198	239	266	290	307	155
	Export, —"—	25	32	36	44	47	188
	Export, % of production	12.7	13.4	13.7	15.1	15.5	
Plywood	Production, mill.m^3	6.3	10.81	15.35	24.20	30.71	510
	Export, —"—	0.40	1.01	1.47	2.61	4.30	1075
	Export, % of production	6.7	9.4	9.6	10.8	14.0	
Building board	Production, mill.m.tons	2.05	3.17	4.38	6.36	7.52	367
	Export, —"—	0.26	0.54	0.85	1.11	1.36	525
	Export, % of production	12.7	17.1	19.4	17.4	18.1	
Wood pulp, mechanical	Production, mill.m.tons	12.18	15.41	18.27	21.63	24.09	198
	Export, —"—	1.01	1.24	1.32	1.42	1.36	135
	Export, % of production	8.3	8.1	7.2	6.6	5.6	
Wood pulp, chemical	Production, mill.m.tons	21.51	29.58	38.47	52.07	67.14	312
	Export, —"—	4.76	6.35	8.40	11.13	14.87	313
	Export, % of production	22.1	21.5	21.9	21.4	22.2	
Wood pulp, semi-chemical	Production mill.m.tons	—	1.40	2.44	4.40	6.82	—
	Export, —"—	—	—	—	—	0.12	—
	Export, % of production	—	—	—	—	1.8	
Newsprint, world total	Production, mill.m.tons	8.69	11.16	13.96	16.98	20.54	236
	Export, —"—	5.52	6.63	7.51	8.98	10.57	191
	Export, % of production	63.6	59.4	53.8	52.8	51.3	
Newsprint, trade Canada – USA omitted [1]	Production, mill.m.tons	4.41	6.60	9.22	11.43	14.62	332
	Export, —"—	1.24	2.07	2.77	3.43	4.65	375
	Export, % of production	29.1	31.3	30.1	30.0	31.7	
Printing & writing paper	Production, mill.m.tons	7.64	10.33	13.93	18.76	25.23	331
	Export, —"—	0.40	0.66	1.01	1.77	3.15	790
	Export, % of production	5.3	6.4	7.2	9.4	12.5	
Other paper & paper-board	Production, mill.m.tons	26.28	35.20	45.60	61.70	76.81	292
	Export, —"—	1.65	2.48	3.54	5.63	8.63	523
	Export, % of production	6.3	7.1	7.8	9.1	11.2	

1) Export from Canada to USA subtracted from world production and export.

products. Considerable progress has also been made in land transport, but here fairly rigid limits on transport distances still apply.

That international trade is expanding can be seen from the figures in Table 1. They show how world production and exports of major forest products have developed since 1950.

In all cases exports have increased, and in most the rise has been faster than the growth in world production. This means that the share of exports, as a percentage of production, has also increased. There are, however, two items for which exports have not expanded as fast. In the case of mechanical pulp, this is obviously due to the general movement towards integrated mills. As regards newsprint, the world picture is much influenced by one single item, the export from Canada to the USA. When this trade is omitted, newsprint exports for the rest of the world can be seen to have increased at a considerable pace.

These observations concerning the share of exports are most interesting when remembering how much world production of these products has grown in total volume during this period.

Consideration also has to be given to the substantial efforts which sveeral countries have made in order to become less dependent on imports of forest products. Despite this, expanded international trade in wood-based goods has been necessary in the past, and will obviously be needed also in the future, if the growing requirements of mankind are to be satisfied. Our conclusion must be correct: international trade should be able to supply world deficits of forest products in coming years as it has in the past.

From the point of view of countries which are greatly dependent on their exports of forest products – Finland is one of them – these figures are particularly important. Their massage may offer some comfort in a time when overcapacity again puts its stamp on the market.

It has sometimes been said to FAO: "Yes, you are very competent in making forecasts for 1980 or 1990, but you cannot tell ut what the market will look like in September this year". This is a valid comment. FAO has never attempted short-term forecasts, which it thinks market organizations are far more competent to make. On the other hand, FAO's long-term projections have proved reasonably accurate, as far as time has allowed them to be checked.

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Despite the well-documented trend that more and more forest products have to be imported from somewhere, we can nowadays notice serious attempts not only to keep in force but to erect new artificial barriers on the road to free trade in these goods. The interests of untold consumers can hardly be served if such attempts succeed.

In this connection, it is appropriate to discuss in somewhat more detail the situation in Europe, the largest deficit area. As a whole, Europe did not import many forest products until the mid-1950s; the continent was in fact a modest net exporter. Since then, an increasing stream of timber and wood-based products has been flowing in, mainly from overseas. Although roundwood production within Europe can be increased considerably through better silviculture, consumption is growing at a pace which actual wood removals cannot match. Therefore, the deficit is bound to widen continuously and rapidly.

In the case of pulp and paper, imports arrive mainly from mills in Canada and especially the USA, where the situation is very different compared with the traditional European, or more appropriately the Central European, setting. These exporting units are commonly of the most modern design and size, favourably located, and often supported by steady home markets. Exports correspond more or less to marginal capacity. Many of the European mills on the other hand are small and not very modern; in the case of paper, they are seldom integrated, i.e. they depend on imported pulp.

It is not difficult to understand why many of the typical European mills have in the present situation experienced great difficulties. These difficulties are not basically the product of some passing wave of world over-capacity; they are the results of far reaching changes in the general market structure which are not likely to be reversed. As long as Europe was a fairly closed market, it had its own price-fixing machinery which was not too muck influenced by events outside the continent. Thus, prices tended to be kept at levels which somewhat corresponded to the needs of even obsolete operations. Import duties also often helped this type of industry to continue. Now a new concept has developed. The decisive factor has been the growing deficit of forest products within Europe and the impact of a new type of

trading partner on the market. Naturally, the situation has been influenced also by such organizations as the Common Market and the European Free Trade Area.

The European dilemma has not noncerned so much Finland (nor Sweden) because these countries have modernized their mills during the last decades. They are now technically nearly on the same level as the newcomers on the European market, the North American mills. However, as far as economic factors are concerned, there are still some important differences. In Finland, roundwood price levels are very high. Capital is usually expensive and so are fuels, which all have to be imported. In addition, logging operations tend to be costly because the fragmented structure of forest ownership makes full-scale mechanization difficult.

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The problem of rising costs is a major headache for everybody in the industry. Without going into this theme further, a few words more about roundwood prices may be said. As was mentioned, in Europe and particularly in Scandinavia such prices are very high, the stumpage prices probably being the highest in the world. This has a number of implications. One of them – and indeed a positive one – is that a high price for wood is probably the best possible inducement to intensive forest management. Another is that powerful political parties have to take into consideration all matters which have a bearing on the wellbeing of their constituencies, and there is no question that wood prices are a very major issue in this sense. Price levels of roundwood cannot be changed simply through Government decisions. However, organizations representing industries and forest owners have usually, after tough negatiations, been able to reach voluntary agreements in which wood prices have been fixed from time to time. These negotiations have during the last 10–15 years acquired a new and interesting nuance through the progress of industries which are owned by the forest owners themselves. This means that shareholders and board members of these industries, leading politicians among them, are not merely wood sellers, they have become buyers, too.

Many observers in Europe are now worried about how roundwood prices are going to develop, given such increasingly dominant factors as the modest level of royalties paid to the provinces in Canada, the probably nonexistent stumpage prices in the USSR, the low cost of producing more and more roundwood in the southern states of the USA, and the highly mechanized harvesting methods which can be applied in all these regions. In the future, the roundwood produced in the short rotation man-made forests in the developing countries may become another factor.

Against this background, a well-justified question is: Will intensively managed forestry, say in Europe, run into a cost and price squeeze? No guess on this point is needed: the squeeze is already there. We in Finland, however, are somewhat hopeful that this squeeze will be checked through such factors as the rising costs of harvesting virgin timber when areas which are increasingly inaccessible have to be entered, and through the spectacular growth in consumption of our products.

Another great problem is: What is going to happen in Europe when the Free Trade Area is discontinued and the Common Market expanded? The outcome of discussions which are still unfinished are bound to have a serious impact on the future of forestry and forest industries within the region. This is likely to be the case in Finland and Sweden, neither of which is going to join the Common Market as members. They are the only countries in Europe which have a large export capacity in pulp and paper. It would be hard to believe that the interests of the Central European countries, with their growing deficits, would support the erection of barriers between them and their most natural and traditional suppliers of these goods.

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Let us now take a somewhat closer look at the world forestry situation. There is an abundance of hardwood located mainly in the tropics, of which only a selected fraction so far has been taken into use. The rest, known as secondary species, have no market value at all. A question often heard is: Could not this wood

be utilized for pulping now that hardwood fibre has become generally accepted? Technically the answer no doubt could be yes but economically, in most cases, it still is no. It seems that hardwood resources in old paper-making countries, at least for time being, are sufficient to satisfy the world demand for this type of fibre. Time, however, works in favour of hardwood fibres, and in several countries large new plantations of such species as *Populus, Eucalyptus* and *Gmelina* have been established. The wood from these very fast-growing monocultures offers considerable advantages over the present "secondary wood", which is a random mixture of a great number of hardwood species.

Of still greater importance are the new plantations of fast-growing coniferous species which in a number of warm countries are already producing the raw material for sizeable pulp and paper mills. The southern states of the USA are, in fact an outstanding example of this type of development. One of the most interesting questions in world forestry is: What kind of role are such man-made forests going to play in the future, particularly in the developing countries?

So far, experience from these plantations has been good in several aspects. Costs of establishment, maintenance and harvest have been low or at least reasonable, rotation short and yield almost fantastic. All this looks very inviting for an investor. But the other side of the coin ist he shortage of skilled labour, the additional costs of construction and operation in areas with a lack of infrastructure, and above all, the erratic political situation. Even so, the positive experience is so pronounced that a wood-hungry mankind has good reason to consider the man-made forests as being very important in the future.

Another point is that many developing countries which have a potential for man-made forests are in urgent need of more export earnings. Planners in such countries have studied the consumption forecasts made by FAO and others, and great hopes are now attached to forestry and forest industries. The intention in these countries is to obtain a fair share of the expanding international trade so offered. This would indeed be a very convenient way of improving the economic position of many developing countries. This is not mère speculation; the establishment of new plantations and industries based on them has become a growing issue, for example within the programmes of the United Nations' development organizations.

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Turning to virgin coniferous reserves, the largest remaining ones are in Canada and the USSR. In both countries, the speed of opening up these still very large reserves will depend on government policy, which may change from time to time. But always the major long-term problem will remain the same, namely finding the appropriate timetable. When the round of first exploitation is about to terminate, a sufficient supply of "second growth" timber has to be available so that there will be no gap. As long as virgin forests occurred almost without limit this problem was not a great headache. Today is has certainly become one, particularly in areas where nearly all the froests are mature or even over-mature. Greatly expanded inputs in silvicultural activities will obviously be needed in order to secure and speed up the availability of second-growth timber.

When considering this problem, it is illustrative to have a look at Finland. This country, for its entire length, belongs to the same cold coniferous zone which extends through the USSR and Canada. Forests in the more densely populated southern part of Finland were largely in very poor shape some 70–100 years ago at the time the forest industries made their start in a modern sense. Destruction was caused mainly by shifting cultivation and wild fires; silvicultural efforts were seldom made in those early days. A generous Mother Nature took care of regeneration, however, and at present the most productive stands grow on the former burnt-over areas. Forest management has made great strides and now the Finnish forests are much better than at the turn of the century. The national forest inventories, of which the fifth was completed in 1970, have convincingly demonstrated this positive evolution.

In the northern part of Finland, the situation is somewhat different in that large areas of mature stands have remained almost untouched until recently. Here the present problems are very much the same as those of the Russian or Canadian backwoods – finding the most feasible

timetable for exploitation and securing the regeneration. The national forest inventories and extensive research activities have provided invaluable information, and large tracts have already been regenerated during more than one hundred years of organized management. This means that a good deal of experience is available.

This experience shows that even in northern Finland regeneration nearly always succeeds, but that recovery may take considerably more time than further south. Furthermore, the new growth will contain more hardwoods of limited value. However, regeneration can be speeded up and the quality of the new stands improved through appropriate silvicultural measures. This will, however, cost a great deal of money and some hesitation is therefore understandable in view of the long rotation.

Regeneration, in fact, is commonly taking place only because of cutting, which often has to be clear-cutting. This is something which can be difficult to understand for many an eager conservationist. Another point is that there always exists an ecologically critical zone of transition below the forest limit which must not be encroached upon. Preserving this zone should not be too difficult because on such areas considerations of economic viability almost coincide with the ecological factors.

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This Finnish experience has a great deal of relevance for the forests of northern Canada and the USSR. There is, however, another reason why the situation in Finland has been explained here in some detail, and this is the usual questions a forester from this country nowadays meets. The questions are: Are you over-cutting your forests? Have you expanded your industries too much?

In southern Finland the situation is, generally speaking, well balanced. With the help of several kinds of inputs, an equilibrium between yield and removal is likely to be maintained. The drainage of peatbogs and wetlands has already added no less than 4 million hectares (10 million acres) to the productive forest area, and fertilization has nearly become a routine, just to mention two typically Finnish features. There are still some reserves available, in particular the fuelwood consumed in rural areas. In northern Finland, it is true that the epoch of exploitation is nearing its end and some reduction of removals is likely to be necessary in the years to come, but this will concern primarily roundwood of sawlog size. This may lead to a reduction of the sawmill industry in this part of the country, but the overall situation will be balanced through surpluses in the south and also through imports now coming from the USSR and Sweden. How long roundwood imports to Finland are going to be continued, of course, remains to be seen. Because of geography, however, the easiest way to the market from certain forest districts in the USSR is, in fact, via Finland.

In any case, it has been commonly accepted that from now on a more through consideration will be needed before any major expansion of roundwood consumption can be started. A voluntary agreement has been made on this point between the industrial organizations and the Bank of Finland. It is possible that this agreement has been understood as something of an emergency measure, and thus given birth to some alarming rumours. There is little reason for them, however.

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A basic condition for forestry is always the availability of a labour force capable of carrying out the operations needed. This human factor should not be overlooked when discussing trends in forestry. Therefore, in conclusion, a few words will be said about the present labour situation.

In countries where forest districts are almost uninhabited, logging operations cannot be started without costly preparations: transport facilities and accomodation for mobile labour have to be made available. When operations are later moved to new untouched areas, the same inputs have to be repeated. On the cut-over tracts perhaps no people remain.

This pattern of exploitation can be found in many regions of the world. With the expection of the sites for processing industries, thist ype of forestry has seldom resulted in an extension of the limits of permanent settlement or in the creation of a stable rural community. Nor has

it been a good inducement to silvicultural activities, so often badly needed after the exploitation.

In Finland the greater part of the forest belongs to farms. The fact that a Finnish farm is nearly always a combination of agriculture and forestry has provided an opportunity to use the same labour for two purposes: in summer in the fields and during the rest of the year in the forest. Such a symbiosis has contributed to the eagerness of the Finn to colonize even remote areas.

This means that farms are spread almost everywhere and, in addition, that a network of public roads, of a quality usually sufficient for timber trucking, has been constructed to most of them. The scattered farms have not only supplied the labour force for forestry, including horses and more recently tractors, but also catered for them in the vicinity of their job sites.

Such facilities have been of fundamental importance to forestry, which has enjoyed them without any particular investment. This is obviously one of the reasons why timber achieved a considerable stumpage value even in early days. It has also contributed to progress in proper forest management. Only in less populated areas, mainly in the northern part of the country, have special logging roads and camps been needed; here the forest owner has most often had to pay for them exclusively. In such areas stumpage values have developed more slowly.

Only some 25 years ago, when forestry tools were the axe and the handsaw and there were only a few tractors, a great many farmers were also part-time lumbermen. They were prepared to earn money through selling and delivering the crop from their own woodlots i.e. cut and hauled. If need be they could also offer their surplus labour to some other employer. Even without outside employment the farm generally gave a reasonable subsistence. Compared with the farmless lumberman, the farmer thus enjoyed a much firmer social position.

Then the powersaw arrived and, with horses disappearing, the agricultural tractors were partly augmented with special logging equipment. This development called for so much specialization and added immediately so much to the productivity that the number of men working in the forests started to decrease sharply. This trend has continued, accentuated by new types of equipment: the four-wheeled skidders, the automatic tree harvesters, etc. The high price of these machines necessitates operations around the year. There is also a changed approach on the industrial side which contributes to the trend towards around the year operations.

Parallel to this, the number of men has fallen further and the demand for professional skill and specialization has increased. A great number of the former part-time lumbermen with their limited skill and insufficient equipment have disappeared from the scene and are unlikely to come back. It is true that many of the new-breed lumbermen with their machines may still be using an old family farm as their base and may even run the farm (or their parents run it), but in such cases agriculture plays only a marginal role and may soon be discontinued.

A particular problem in Finland is the fragmentation of farm forests, the average size being less than 40 hectares (100 acres). Forest industries own only 7–8 % of the forest area and therefore have to buy most of their raw material from farm woodlots through a colossal number of purchase contracts. Collecting the timber was no doubt easier as long as it was sold delivered from many of these parcels, but now the trend is reversed. It is obvious that heavy machines cannot be operated economically if the working units are too small. It is hoped that co-operative activities among the forest owners, which in other fields are well developed, will relieve this dilemma. With the help of joint management planning, tracts to be harvested and later silviculturally treated will be extended beyond woodlot limits, thus allowing for sufficiently large units.

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The developments in forestry mentioned so far coincide with a serious crisis in Finnish agriculture created by over-capacity and the high production costs of essential foodstuffs. One factor behind this is the vigorous land-settlement activity which immediately followed the Second World War and led to a great increase in the number of small farms. The present situation clearly implies that a drastic

reduction of the area under plough will occur and, consequently, the number of farms decrease. What is going on is in fact already mirrored in the large exodus from the northern and eastern districts to urban areas and to the more industrialized south-western part of the country, and in the emigration to Sweden.

Many of those involved have earlier been employed at least part-time in forestry, or have parents who were. Many of them still possess their old farms, but the arable land has been taken out of production ("packaged") in accordance with the soil-bank law of 1969 and may even have been planted with trees. The farm's forest is often kept as an invesment and buildings for holiday use. In certain regions the exodus has reached such a magnitude that it is feared that the traditional Finnish concept of an attractive rural community has come to a critical period. The fact is that forestry is at the moment short of labour in districts which only recently had a surplus.

The situation carries the stamp of transition. Still much of the timber from farm woodlots is sold delivered, which offers advantages from certain points of view. However, the farmer, when calculating his income from such a sale, does not always make a clear distinction between the earnings from his work input and the stumpage of the timber involved. Thus he remains a different type of lumberman then the full-time professional.

The mixed composition of the labour force is a feature likely to remain for the time being, although the importance of the professionals continuously increases. This implies a certain competition between the two groups which is likely to have a damping effect on the development towards a fully professional and permanently employed forestry labour force.

Will forestry in Finland be able to secure its supply of labour in the future if such trends continue further? This is a question nowadays often discussed in forestry circles. Thoughts now agree that a new approach based on a decisive labour policy is essential and that in particular the following points require action: better vocational education and training, improved social security with jobs offered the year around, and earnings and benefits which fully compensate for the hardships and hazards of the vocation. The opportunities offered for further increases in productivity through rational utilization of modern equipment should help to achieve the goals set without handicapping the competitive chances of Finnish forest products on the world market.

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