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RECENT TRENDS IN THE DEVELOPMENT OF THE FOREST SECTOR IN FINLAND AND EASTERN CANADA*

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Contents

Abstract

Traditionally, the impact of the forest sector on economic development has been different in Finland and Eastern Canada. Whereas the Finnish development path can be called intensive and integrated, that Eastern Canada has been extensive and incoherent.

During the last few decades, a certain convergence between the development paths has taken place, such as rural depopulation due to mechanization of woodlands operations and the erosion of competitiveness of the industries in the international markets. Lately, the industries have been suffering from a shortage of wood. The rationalization and automatization of the production have provoked unemployment in mill towns.

In Finland, the pulp and paper industry is trying to answer to the new challenges by investing in the new production technology and by shifting to higher value added grades. In Eastern Canada, the Federal Government and provincial governments have promoted a large modernization programme in the pulp and paper industry. Both production technology and product assortment are still, however, more traditional there than in Finland.

Environmental issues, such as the havoc caused by acid rain and the mobilization of population for the conservation of nature and the protection of environment are setting new constraints to the industrial exploitation of forests and the expansion of the forest industries.

Résumé

Traditionellement, l'impact du secteur forestier sur le développement économique était différent en Finlande et dans l'Est du Canada. Tandis que la voie de développement finlandaise puisse être appellée intensive et intégrale, celle de l'Est du Canada était extensive et désarticulée.

Pendant les dernières décennies, certaines tendences de convergence sont apparues entre les deux voies, comme la dépopulation rurale due à la mécanisation des travaux forestiers et l'érosion de la capacité concurrentielle de l'industrie forestière dans le marché international. Tout récemment, l'automatisation de la production provoque le chômage dans les villes dominées par l'industrie forestière.

En Finlande, l'industrie de pâte et papier essaye de répondre aux défis nouveaux en investissant dans la technique de production nouvelle et en convertissant la production vers les produits d'une haute valeur ajoutée. Dans l'Est du Canada, le Gouvernement Fédéral et les gouvernement provinciaux ont contribué financièrement au plan de modernisation étendu dans l'industrie de pâte et papier. Néanmoins, la technique de production et l'assortiment des produits sont toujours plus traditionnelles là qu'en Finlande.

Les questions sur l'environnement, comme la dégradation de la fôret par la pluie acide et la mobilisation de la population pour la conservation de la nature et pour la protection de l'environnement, sont en train de poser les constraintes nouvelles en ce qui concerne l'exploitation de la fôret et l'expansion de l'industrie forestière.

1. THE IDEA OF COMPARISON*)

Even though Finland is a relatively small country in northern Europe and Canada a vast continental country in North America, there are good reasons to compare these two countries with each other. There are evident geographical similarities. The main parts of Finland and Eastern Canada are situated on the Precambrian formation which has been moulded by the retreat of glacial sheets. Typical of both regions is an ample network of lakes and rivers. During the winter, the ground is covered by snow and the watercourses are frozen.

Historically both Finland and Canada were dependent on metropolitan powers. Traditionally, both Finland's and Canada's role in the international division of labour was to provide various staple products, such as fur, fish, timber, sailing ships, tar, and potash, for metropolitan markets. During the last century, the industrialization of Great Britain had a decisive influence on the rise of the modern sawmill industry in Eastern Canada and Finland.

So geography and history serve as a good starting point for comparative studies in economic development in Finland and Canada. A good theoretical starting point for such studies is the staple theory. Because geographical and historical similarities are the most pronounced between Finland and Eastern Canada, this study will deal with the comparison of the development of forest sector in these two regions. The main focus is recent development trends.

*) I have formerly dealt with the comparison of the development impact of the forest sector in Finland and Eastern Canada in several studies cf. Raumolin 1981, 1982, 1984a, 1985a and 1985b. This study is a continuation of these studies with special reference to recent development. The introductory part heavily leads on my recent publications printed in Fennia.

2. THE DIFFERENCE OF DEVELOPMENT PATHS

2.1. The Main Institutional Differences, 1920-1970

The exports of forest products have played a very important role in the industrialization of Finland and Eastern Canada. In the case of Finland, this role has been even primordial. These exports are still the most important export items in both regions. In general, the development impact has been, however, quite different in each case. The differenciation of the development paths is mainly due to institutional differencies. The principal elements of these differencies are summed up in the following table.

(table 1.)

2.2. Further Notes on Development Experience, 1920-1970

Except for many differencies of institutional type, there have been many similarities in the development experience as well. The location of the industries close to the raw material sources, hydroelectric sources, and the main transportation network have exerted a profound impact on regional development both in Finland and Eastern Canada. The rise of the pulp and paper industry has had a decentralizing influence on industrial location and town structures in both regions.

(figure 1. and figure 2.)

The exploitation of forest resources has had a profound impact on the development of rural settlement as well. As the cultivation conditions are not very favourable, typical of the rural settlement in the forested parts of Finland and Eastern Canada has been a mixed farming system more or less specialized into dairy farming. The work outside the farm, principally forest work were important for the viability of the farms. The extensive rural colonization programmes in Finland and Eastern Canada during the first half of this century would not have been possible without the support the expansion of forest industries and forest work.

In spite of the clear geographical distinction of the main export markets, the forest industries in Finland and Eastern Canada have met each other in other export markets as well. The newsprint from Newfoundland has been a heavy competitor to the Finnish newsprint in the British market since the Great European War 1914-1918. On the other hand, the Finnish industry exported pulp to the American market during the interwar years. For their part, the Canadian sawmill exports returned to the British market supported by the British preferences again in the 1930s and great amounts of Canadian pulp have arrived to the West European market since the last World War.

As regards interconnections between the forest sector in Finland and Eastern Canada, labour force due to Finnish immigrants has been important in some parts in northern Ontario. Efforts were made to apply the Finnish forest and peatland classification ideas in Eastern Canada especially in the 1930s and 1940s. The transfer of the Finnish technology to the forest industries in Eastern Canada started in the 1960s. The Canadian contributions to the development of the Finnish

forest sector have been restricted. The transfer of some consulting services to the industries and the transfer of ideas and technology as for the mechanization of woodland operations are worth mentioning.

3. THE DEVELOPMENT IN THE 1970S

3.1. General Trends

After the last World War, the spread of the fast-growing plantation forests in favourable environments of the Temperate Zone both in the Northern and Southern Hemisphere, the adoption of new forest management practices in the United States, the widening of the scope of the mechanical wood industry, the new possibilities opened by the adoption of economic bleaching of sulphate pulp, and the development of new pulping methods making use of varied fibre resources all together started to challenge the "monopoly" position enjoyed by the traditional exporters of the Northern Coniferous Forest Zone.

The impact of these structural changes was really experienced among the traditional export countries only during the slowdown of the international economy at the end of the sixties. The great difficulties of the old non-integrated groundwood and sulphite mills were the first striking symptoms of the forthcoming development. The booming conditions in 1973-1974 made again profitable to operate marginal mills so that the necessity for adjustment was postponed for a while.

The deep recession in the international economy in 1975-1977 hit hard the forest industries as well. The slow growth in the late 1970s

generated problems of overcapacity and low profitability for the forest industries overall. The inflation, the increasing demand for pollution control, and the increase in size and complexity of the mills made escalate investment costs in the pulp and paper industry threefold from the late 1960s to the middle of the 1970s. Only the largest companies were able to raise funding for new projects without public support (cf. Eklund 1973 and 1978).

Starting in the late 1960s, new production technology was introduced in the forest industries. Twin wire formers, plastic wires and new headboxes made paper making more efficient, new process control technology increased energy and raw materials efficiency in the mills, new boilers were introduced, and the spread of thermomechnical pulping started in the middle of the 1970s. New technology making possible economic use of small diameter logs was developed for the sawmills.

The rise of environmental issues into the centre of public discussion in the West had a deep impact on the forest sector as well. Stricter pollution controll was asked for, an extension of natural parks and recreation areas demanded, and large scale logging methods such as clear cutting criticised.

3.2. The Finnish Case

As the excessive investment vis-à-vis the available wood supply had strongly contributed to the rise of domestic costs in the 1960s, the Bank of Finland in collaboration with the Central Association of Forest Industries established an investment control system in order to

prevent new excessive investment at the beginning of the 1970s (cf. Raumolin 1984b).

Due to stricter pollution controls and the advantages of the integrated use of wood resources, the shift from sulphite to sulphate was rapid in the 1970s. The investment in new production technology was continuous in Finland. The high investment rate, the limited role of stock exchange market, and low profitability all together considerably increased the burden of debt of the pulp and paper industry.

(figure 3.)

Even though the central associations of the forest industries and the forest owners made a common effort to establish a permanent negotiation system for the wood market, the system did not work well. During the upward cycle, local shortages of raw materials resulted in a significant rise of stumpage price irrespective of agreements. The situation in the wood market became more complicated thanks to a structural change of ownership in privately owned forests. The share of farmer forest owners drastically declined due to rural depopulation and the prevailing inheritance rules in Finland (cf. Reunala 1974).

The mechanization of logging operations together with the limitation of agricultural production contributed to a massive rural depopulation in Finland at the end of the 1960s and in the early 1970s. The introduction of automation into the sawmills caused a decline in the number of jobs in this formerly job intensive industry as well. During the 1970s, the rationalization and further automation of production in

the pulp and paper industry started to create unemployment in many mill towns. The formerly dynamic regions based on the expansion of the forest industries, such as Kymenlaakso in southeastern Finland experienced a relative decline.

The programmes of intensive forestry which had started in the early 1960s continued in the 1970s. Even the World Bank became involved in the funding of forestry programmes in Finland. These programmes included drainage of peatland, plowing of sites, artificial regeneration by plantations, use of herbicides, and fertilization of forest land. Ambitious plans to increase cutting possibilities were presented in this context. After 1975, investment in forestry declined in the wake of economic recession.

The conservation movement grew stronger and more influental in Finland in the 1970s. It criticised programmes of intensive forestry and asked for the adoption of forestry practices closer to nature. It asked for a large extension of the national park network and the protection of peatland from excessive drainage. Two state committees proposed great extensions in protection areas. The struggle between the conservationists and the forest industries on control of land use was especially hard in Finnish Lapland.

(figure 4.)

During the late 1970s, the Department of Trade and Industry commissioned a report on the problems of the forest industries from the leading consulting engineering company, Jaakko Pöyry Ltd. On the other hand, scholars associated to the Finnish Forest Research

Institute developed a dynamic forest sector model for the Finnish sector.

These studies revealed development tendencies which were to make the forest sector a crisis sector in the future. Limits of domestic expansion possibilities were close, the competitiveness of the industries was declining, and the domestic costs rising. A structural change of production was necessary. Taking into consideration her comparative advantages and future market perspectives, Finland should shift from traditional bulk products to quality and high value added products, such as groundwood speciality papers (Jaakko Pöyry 1979; Seppälä&Kuuluvainen&Seppälä 1980; Seppälä 1982).

3.3. The Eastern Canadian Case

Some closures of old non-integrated groundwood and sulphite mills took place in Eastern Canada at the beginning of the 1970s. The most striking example was the mill closure in Temiskaming by Canadian International Paper in 1971. Problems of declining competitiveness provoked a certain reorganization in the pulp and paper industry. The most spectacular event was the takeover of Price Inc by Abitibi Inc in 1974 resulting in the formation of the largest newsprint producer in the world, Abitibi-Price Inc.

Typical of the scenery in Eastern Canada was the closer involvement of large Canadian owned resource companies and investment companies in the pulp and paper industry. Companies, such as Noranda Mines, Canadian Pacific, Olympia&York, Brascan, and Power Corporation became agents of Canadianization of the industry, by and by (cf. Hayter 1985).

In Quebec, the rise of "francophone" enterprise started during "la Révolution Tranquille" continued in full vigor. Public financial corporations, such as Société Général de Financement and Caisse de Dépôts et de Placement became involved in the development of the pulp and paper companies, such as Tembec, Donohue, F.F. Soucy, and Domtar. New strong "francophone" enterprise developed in the mechanical wood industry, such as Normick Perron and the public corporation Rexfor. Large consulting engineering companies, such as SNC, Lavalin, and ABBDL started to diversify their activities into the forest sector as well. Finally, some "francophone" supplier industries, such as Bombardier and Tanguay, became established in the market following the example of Forano (cf. Latouche 1985).

The Pulp and Paper Research Institute of Canada actively participated in the development of new technology, such as twin wire formers for newsprint, and the upgrading of old mills started in the early 1970s but, in general, the spread of new technologies were slower in Eastern Canada than among the major competitors (cf. Styan 1977).

Following the spread of the use of chips as a raw material for the pulp industry, the idea of integration of production gained support in Eastern Canada as well. New expansion of the sawmill and the mechanical wood industries in general started in the 1960s continuing in the 1970s. The traditional concession system serving the one-sided interests of the pulp and paper industry hampered, however, the development of a multisided and integrated resource use. Especially in Quebec, the provincial government activitely promoted the development of the sawmill industry in peripheral regions.

After a period of rapid mechanization and rural depopulation, a shortage of labour force in woodland operations appeared in Eastern Canada in the early 1970s. In the middle of the decade, the limits of the increase in the productivity thanks to mechanization seemed to be attained. Considerable turnover of labour has been a persistent problem in Eastern Canada (cf. Silversides 1972).

In the middle of the 1970s, local shortages of wood were experienced close to the mills in several regions in Eastern Canada. The forestry consultant Les Reed published a report in 1974 where he predicted that the traditional sources of reserve timber supply were disappearing in close future. Several reports stressing the need of shift from the careless exploitation to forest management were published in the provinces in the early 1970s. Among others the revocation of concessions, the formation of new management units, and the shift to a system of volume allocations were proposed. As most of the private woodlots are situated in most accessible locations, all reports paid considerable attention to the management problems of private forests as well. The havoc caused by spruce budworm made the forest management problems even more complicated in Eastern Canada (cf. F.C.L. Reed 1974; MacKay 1985).

Canadian Forest Service was integrated into the structures of the newly established Department of Environment in 1971. Water pollution control become more strict and events like the mercury scandal in northern Ontario raised great public attention. A loud ecological criticism directed against large clear cuttings, reckless exploitation of forests, and massive chemical spraying against spruce budworm. The network of recreation areas and natural parks expanded in Eastern Canada during the 1970s.

During the late 1970s, F.C.L. Reed & Associates prepared a large critical report on forest exploitation practices and lack of forest management in Canada. The report predicted serious wood supply problems especially in the Atlantic provinces. Acceptable regeneration of cutover forest land was experienced nowhere. On the other hand, the review of the forest products industry prepared by Department of Industry, Trade and Commerce in Ottawa pointed out that the industry utilized outmoded technology and was losing its competitiveness. Forest sector was becoming a crisis sector in Eastern Canada. The proposed remedies included a radical reform of forest management and massive investment in new technology (cf. F.C.L. Reed 1978; Review of the Canadian Forest Products Industry 1979).

3.4. Convergence and Divergence

During the 1960s and 1970s, a certain convergence between the development paths in Finland and Eastern Canada took place, such as rural depopulation due to mechanization of woodland operations and the erosion of competitiveness of the industries in the international markets. The forest sector was becoming a crisis sector both in Finland and Eastern Canada.

The rise of "francophone" economic nationalism in Quebec was similar to the rise of Finnish-speaking economic nationalism in Finland in the 1920s. The effort toward domestic control of the forest industries and toward integration of production in Eastern Canada made the Eastern Canadian development path move closer to the Finnish one than before.

Great differences between the development paths persisted, however, continuously. Extractive exploitation was still practised in Eastern Canada irrespective of reformist speech and radical reform proposals. In fact, the productivity of forest per hectare was 3-4 times higher in Finland than there. On the other hand, prices of important production factors were continuously cheap in Eastern Canada as compared with Finland. For example, stumpage price and electricity cost were 2 times higher in Finland. On the contrary, the production structure was more efficient, integrated and upgraded there.

4. DEVELOPMENT IN THE 1980s

4.1. General Trends

Typical of the international economy of the first half of the 1980s was high U.S. dollar and interest rates due to the economic policy of the Reagan administration in U.S.A.. The liberalization of the trade between the EC and the Nordic Countries was accomplished in 1984. Simultaneously, quotas for imports of paper from North America were cut down. All this made it difficult for the American and Canadian exporters to maintain their shares in Western Europe. The strong devaluation of the Swedish krona just before the upward cycle in 1983-1984 gave a considerable advantage to the Swedish exporters of sawmill and pulp products in the EC market.

The competitive pressure from the South increased all the time: the growth of import substitution capability was continuous and the rise of exports of mechanical wood products and pulp was permanent. The need to retain the competitiveness increased the spread of new

technologies in the North: TMP and CTMP replaced chemical pulps, the use of paper and board formers generalized, new automation and process control systems were introduced in the wake of microprocessor upheaval etc.

The expansion of production attained again new records but low profitability, high debts and difficulties in raising capital for new projects were typical tendencies in the 1980s as well. Overcapacity, mergers, acquisitions, shutdown of old mills, and rationalization characterized the forest industries in the West in the 1980s.

The new environmental problem, airborne pollution become a serious public concern in the industrialized countries everywhere. The havoc caused by acid rain was considerable in the forests in Central Europe. International relations were affected by transborder pollution. The discussion about the future of forests and forestry was facing new challenges (cf. Postel 1984).

(figure 5.)

4.2. The Finnish Case

The struggle against inflation, high interest rates, and the rise of real interest rates characterized the monetary policy in Finland in the early 1980s. After a small devaluation in the late 1970s, no new devaluation was undertaken. The studies pointed out negative economic impacts of traditional devaluations and changes in the constellation between different economic interest groups made it more difficult for

the interests connected with the forest industries complex to impose their views. In fact, the forest products lost their traditional position as the leading commodity group in the Finnish exports to the basic metal and engineering industry products. In these industries, unlike in the forest industries, foreign inputs play an important role in production.

The pulp and paper industry continued its investment in new production technology all the time. On the one hand, pulp exports declined and new investment directed to bleached kraft and TMP, PGW, and CTMP integrated to paper mills. On the other hand, groundwood speciality paper started to replace newsprint in paper exports. The shifting of production to higher value added grades went even further than in Sweden. The rapid rise of the exports of groundwood speciality papers to the EC market, thanks to the liberalization of the trade, raised protests among the traditional producers in Central Europe. As Finland lacks both fossile fuels and ample hydropower resources, the shift to thermomechanical pulp has become a hot political issue because its implications of the construction of more nuclear power capacity.

(figure 6.)

The continuous investment, heavy debts, high interest rates, high domestic costs together with low probitability have pushed the pulp and paper industry financially in a very difficult situation. The need for an increase in company size is evident. The restructuration process started in the middle of the decade and resulted in the merger of Kymmene-Strömberg company with Kaukas company, for example.

(table 2.)

The mechanical wood industry is actually faced with a severe crisis due to lack of competitiveness and saturation of markets. A strong restructuration of the sawmill industry is in full course: the capacity has just been cut down from 12 millions cubic meters to 8-9 millions cubic meters and additional cuts are forthcoming. The capacity of the particlebroad industry has been cut down by half and the fibreborad industry is following the line. The plywood industry is faring better but it is suffering from a shortage of good birch logs.

(table 3.)

Instead, the supplier industry is very dynamic. Finland has risen to a world centre in the production of machinery and equipment for the forest industries, by and by. The main companies in this field are establishing new R & D centres, developing new technologies, and acquiring foreign companies. The pulp and paper industry is internationalising the production as well. This process is provoking conflicts in the traditional export cartels of the industry and leading to the formation of individual marketing organizations among the companies.

The wood market is becoming more and more filled with conflicts. Partly due to changes in ownership structures, the selling behavior of private forest owners is becoming more unpredictable than before. The industries are complaining of shortage of wood during upward cycles in the economy. The stumpage price has attained the highest level in the world. The heavily indebted farmer forest owners want to participate themselves in logging operations, which raise the cost of wood and, in addition, provoke unemployment among professional loggers. Thanks to

the rapid cutting down of the capacity the sawmill industry the latest development in the wood market include the perplexing situation of oversupply of logs.

The hard core of forestry technocrats at the university, at the Finnish Forest Research Institute, and in the forest administration is planning a new programme of intensive forestry with ambitious targets to increase the cuttings and forest growth. The ideas of the 1960s are well alive within the Finnish forestry profession (cf. Metsä 2000, 1985; Raumolin 1985d).

On the other hand, criticism against ingensive forestry practices is mounting in the country. Critical evaluations of the past drainage practices are presented, artificial regeneration has not always been successful, the plantation forests, especially the pine stads, are beset with diseases and producing low quality trees, and the problems of the impact of acid rain is raising growing awareness. A change in the directives for forest management in private and public forests is taking place. More attention is paid to local conditions, natural regeneration, prescribed burning as a method of site prepatation, mixed forests, and the significance of birch in general.

The conservation movement, supported by the tourist interests, gained a great victory in Finnish Lapland, as the Government established a vast UKK natural park close to the Soviet frontier. The name of the new park stems from the initials of the former President of Republic, Urho Kaleva Kekkonen. As a consequence, the overcapacity of the forest industries in Finnish Lapland vis-à-vis the regional wood supplies is still greater than before (cf. figure 4 above; Raumolin 1985c).

4.3. The Eastern Canadian Case

Because of the close integration of the North American economy, the Canadian Government has to adapt to the U.S. economic policy. High Canadian dollar and the establishment of new quotas has cut down the Canadian exports to Western Europe where, in addition, the Canadian pulp exports have had to meet with the strong Swedish competition. The exports of the Finnish and Eastern Canadian forest products have entered into competition even in many markets outside the EC market. The diversification effort of the sawmill exports has led to a competitive situation in the Near East market, for example. Finnish exports of groundwood speciality papers have extended to the U.S. market and even penetrated into the Eastern Canadian market.

The new economic dynamism in U.S.A. has increased Canadian export possiblities in general but regional shifts in newsprint consumption have eroded the traditional markets of Eastern Canadian exports in the Northeast and Middle West. The American pulp and paper industry is increasing its import substitution capability, by and by. The growing penetration of Canadian sawmill exports into the U.S. market has raised protectionist mood in the U.S. Congress. There is a growing market for groundwood speciality papers in North American but the tariffs and a certain conservatism had made the Eastern Canadian pulp and paper industry to react slowly to this opportunity. The Canadian newsprint industry is looking for new markets especially in the direction of Pacific Rim and the Canadian pulp industry is intending to maintain its position as a leading exporter of pulp in the future. (cf. Interim Report 1983).

(table 4.)

Both the Federal Government and the provincial governments heavily contributed to the great modernisation programme in the pulp and paper industry in Eastern Canada in 1979-1982. Shift from traditional groundwood and sulphite to TMP in newsprint production was favoured by cheap electricity rates of the public power companies such as Hydro Quebec. Investment activity diminished afterwards. Even if new production records have been attained, low profitability has made it difficult for the industry to maintain high investment rate without public support. The machinery and equipment is still much older in the mills in Eastern Canada than in Finland.

(table 5.)

A continuous change is taking place as regards ownership and control in the pulp and paper industry in Eastern Canada. On the one hand, there is a tendency to a growing Canadian control. The most spectacular event in this respect was the acquisition of Canadian International Paper by Canadian Pacific in 1981. It is possible that the big international companies are retiring from Eastern Canada in order to be able to maker larger investment in more profitable conditions in the South. On the other hand, new foreign investment is still directed to Eastern Canada. Characteristic of the expansion of Canadian owned enterprise is the rise of such middle-sized companies as Kruger and Cascades (cf. Hayter 1985).

(table 6.)

The mechanical wood industry is faced with reorganization in Eastern Canada. The expansion of the sawmill industry has been excessive in

certain regions. On the one hand, the industry is suffering from dwindling supplies of good logs and on the other hand, this expansion has resulted in an oversupply of chips. In Quebec, the public corporation Rexfor is trying to rationalize the mechanical wood industries in the peripheral regions of the province. The wood panel industries which operate mainly for the domestic market are experiencing great difficulties as well.

The supplier industries are dominated by branch plants in Eastern Canada. The domestic capability is quite weak except for consulting engineering where the Canadians are at top level internationally seen. Because of the foreign domination the autonomous R & D is poorly practised and export possibilities limited. The project export supported by public funds to the Comecon market and to the developing countries has occasionally led to considerable export of machinery and equipment from Eastern Canada (cf. Hanel 1985).

A certain internationalization of production is taking place in Eastern Canada as well. The Canadian controlled pulp and paper industry is investing in U.S.A. and some investment is directed to Western Europe. The leading Canadian controlled supplier industries are internationalizing the production following the line. They are especially interested in gaining access to the dynamic markets in the U.S. South.

The havoc caused by spruce budworm amd the degradation of the forest by acid rain seem to increase regional wood supply problems of the forest industries in Eastern Canada. Starting at the beginning of the 1980s, a continuous public discussion about the need of establishing

good forest management practices has taken place both at the federal and the provincial level there.

(table 7.)

The great dichotomy between the public speech and practical operations is a firmly established tradition in the Canadian forestry. As the establishment of the proper forest management would considerably increase wood costs, in the industry's opinion, there has been few incentive in changing the situation. Actually, a great stress is laid on artificial regeneration of the forest by massive plantations which has an evident political appeal. The way from plantation to good forest is, however, not so evident as generally supposed in Eastern Canada.

The success of plantation programmes is not guaranteed as the quality of seedlings is not necessarily appropriate, planting is not always properly executed, extreme weather, pests and insects attack plantations, and continuous care of young forest is missing. A priority in the promotion of better forest regeneration should be given to the reform of wasteful logging practices. This implies, however, a radical reorganization of the traditional logging enterprise. It is much easier to modernize the mills than to change established socio-economic structures. This is the reason why modern efficient mills coexist side by side with destructive exploitation everywhere in Eastern Canada and engineering solutions to upturning problems are continuously looked for.

The provincial government of New Brunswick was the first to show civil courage by revocating the traditional concession system and by establishing obligatory forest management plans for public lands in 1981. The danger of exhausition of wood supplies was imminent, there were no northern reserves in the province, and its economy is critically dependent on the wealth of the forest industries. No obligatory public regulation of private forests was established, however. There is a long way to good forestry in Eastern Canada.

4.4. Convergence and Divergence

Even the largest Eastern Canadian pulp and paper companies lie far behind the largest American and Japanese companies. The company size is, however, much larger there than in Finland, generally seen. The recent development and restructuration in the Finnish pulp and paper industry is leading to the formation of two additional companies with international stature along with Enso-Gutzeit, Kymi-Strömberg-Kaukas and United Paper Mills. Side by side with these large companies, there also exist successful middle-sized companies both in Finland and Eastern Canada.

(table 8. and table 9.)

Among the Western industrialized countries, Finland and Canada are not famous as regards the size of the national R&D effort. Among the industrial sectors in these countries, the R&D effort of the pulp and paper industry is low as compared with chemical and engineering industry, for example. The Finnish industry is pursuing, however,

relatively more R&D than the Canadian one. Whereas the R&D expenditure per value added in production is around 1.00 % in Finland, the equivalent percentage in Canada is around 0.80. The R&D expenditure in the supplier industries is relatively higher in Finland as well (cf. Hayter 1982; Hanel 1985; OECD 1985).

(table 10.)

If R&D effort is considered a key for success in the future, the Finnish industry seems to have better chances. Because of domestic control of the industries, the close integration between the forest industries and the supplier industries, and the well-established traditions of collective research and action, the diffusion of new technologies seems, in general, to be easier in Finland than in Eastern Canada.

The internationalization of the Finnish industries has extended to Canada as well. The transfer of the Finnish technology is passing via exports of machinery and equipment, export of licenses, and direct investment. The transfer of technology the other way round is actually minimal. Among the leading Eastern Canadian suppliers, Sentrol Systems has established a branch in Finland.

(table 11.)

The forestry experts in Eastern Canada like to present the Scandinavian forestry as a model to attain. As the Canadian experts in general are interested in technical questions, the specific historical, social and political context of the Finnish model is

abstracted away from the discussion. The technocratic model of intensive forestry established in Finland in the 1960s is close to their preferences. It is a kind of irony of history that this kind of forestry seems to be only a passing phase in Finland.

During the last few years, some directors of the Finnish forest industries, exasperated by the problems of wood market, have proposed that the Canadian model of forest exploitation should be adopted in Finland. The industry should, for example, have a free access to public forests. These proposals forget the decisive difference between extractive exploitation and sustained-yield forestry. As the internationalization of the Finnish industries goes further, the forestry discussion will surely become still more lively in the country.

5. SOME THOUGHTS ABOUT FUTURE

The main trends in the world economy of forest products are actually perplexing. Destruction of forest cover is going on at an alarming rate in the developing countries. Regional shifts of the international division of labour are undermining the competitiveness of the traditional leading producers. Dynamic development is taking place in the South based on rapidly-growing plantation forests.

The havoc caused by acid rain and other pollution agents pose a challenge to very many traditional forestry ideas in the North. The increasing environmental constraints of forest growth may pose problems to the rapidly-growing plantation forests in the future as

well. The worst scenarios of future include radical ruptures in the supply of forest products at world level.

The rapid technological change due to new technological breakthroughs, such as microprocessors and biotechnology, is disturbing the situation still more. The demand, the supply, and the production processes of the forest products will be affected by these breakthroughs but nobody can present an exact forecast about future developments.

The forest industries have to become more adaptive, innovation conscious, technology conscious, product conscious, market conscious, and environment conscious. This is a great challenge to the traditional successful forest industries of the Northern Coniferous Forest Zone. As the persistence and regeneration of the Northern Coniferous Forest cannot be taken as granted as before, new interpretation of the sustained-yield is necessary. Instead of the attainment of the optimal growth of the forests, the target of the forest policy should be the attainment of a healthy and productive forest.

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Table 1.

Main Differences in the Development of the Forest Sector in Finland and Eastern Canada, 1920-1980

Finland:	Eastern Canada:
Intensive and Integrated Development Path	Extensive and Incoherent Development Path
- Forest resource chief asset	- Forests, mines and hydroelectricity
- Three main tree species	- Diverse tree species
- Private small woodland ownership dominant	- Public forest ownership dominant
- Well-developed botanical research: original forest classification system	- Biogeographical research limited: expanded after World War II
- Sustained-yield forestry	- Extractive exploitation
- Western European export market dominant	- U.S. export market dominant
- Except sawmill and pulp and paper products spool and plywood products important export articles	- Sawmill and pulp and paper products dominate exports
- Finnish control of industries	- Direct foreign investment in the pulp and paper industry
- Direct public intervention in the production via state-owned companies	- Economic liberalism dominant attitude with regard enterprise
- Close integration between forest industries	- Separated forest industries
- Strong export cartels	- Individual marketing organizations dominant
- "Negotiating" labour union movement	- "Striking" labour union movement
- Strained war conditions	- Expansionist war conditions
- Close integration between forest industries and engineering industry	- Separated forest industries and engineering industry
- Domestic control of the production of machinery and supplies	- Foreign branch plants dominate the production of machinery and other supplies
- Export of machinery and supplies	- Import and home market production of machinery and supplies dominant

Formerly published in Jussi Raumolin: The Impact of Forest Sector on Economic Development in Finland and Eastern Canada in J. Raumolin (ed.) Natural Resources Exploitation and Problems of Staples-based Industrialization in Finland and Canada. Fennia 163:2, 1985 p. 428 (slightly modified).

Table 2.

Recent Mergers and Plans of Mergers in the Finnish Pulp and Paper Industry

Main Interest Groups Involved	Companies Involved	Principal Events
National Bank (KOP) Finnish state Metsäliitto Ltd	Kajaani Ltd Oulu Ltd Veitsiluoto Ltd Kemi Ltd	National Bank proposed a merger plan "Pohjolan Paperi" uniting Kajaani, Kemi and Oulu companies for the re-organization of the forest industries in northern Finland in 1983. The state-owned Veitsiluoto company opposed to this plan. No decisions were taken. The debate was reopened at the end 1985. A political struggle between the Center Party and the Social Democratic Party started about the issue at Government level. Finally, the issue was settled so that Veitsiluoto company acquired Oulu Ltd and Metsäliitto Ltd and Kajaani Ltd acquired Kemi Ltd.
Enso-Gutzeit Ltd Finnish state	Enso-Gutzeit Ltd Metsäliitto Ltd Rauma-Repola Ltd Plan Sell Ltd	Enso-Gutzeit presented a plan for "Metsä-Karelia" in 1985. The idea was to unite the principal sawmills in northern Karelia, to construct a larger pulp mill in Uimaharju, and to increase the forest assets of Enso-Gutzeit company by a transfer of state forests to the company. This plan did not succeed.
Union Bank (SYP) Ehrnrooth family	Kymmene-Strömberg Ltd Kaukas Ltd Schauman Ltd	Kymmene-Strömberg acquired 45 % of the shares of Kaukas in 1985. Kaukas and Union Bank acquired 45 % of the shares of Schauman. Kymmene-Strömberg and Kaukas merged together at the beginning of 1986. The new company is the second largest one in the pulp and paper industry in Finland.

Sources: News in Helsingin Sanomat and Talouselämä.

Table 3.

Main Closures of Sawmills in Finland, 1985-1986

1985

Company	Production m^3	Number of Workers
Rymättylä Oy, Naantali	80 000	72
Rantapereen saha, Laitila	45 000	66
Hakkeenpään saha, Taivassalo	40 000	37
Timo Kärkkäinen, Kiuruvesi	35 000	30
Metsäliitto Oy Paimion saha, Paimio	30 000	33
Tohman saha, Tohmajärvi	30 000	20

Projected in 1986

Rauma Repola Oy Lahden saha, Lahti	180 000	253
Rauma-Repola Oy Röyttän saha, Tornio	120 000	158
Kymi-Strömberg Oy Hallan saha, Kotka	150 000	166
Enso-Gutzeit Oy Heinolan saha, Heinola	100 000	154
City of Helsinki Heinolan saha, Heinola	33 000	103

Source: Seppo Määttänen: Kylmenevää sahateollisuudessa. Talouselämä 1985 (38), 77.

Table 4.

Canadian Shipments of Newsprint by Market Region (thousand tns)

	Average 1979-1981	1981	Estimated 1982	1986
Canada	985	1045	935	1100
United States	6185	6060	5615	6650
United Kingdom	460	540	540	450
Other Western Europe	185	190	170	200
Latin America	530	625	470	425
Japan	15	15	10	200
People's Republic of China	55	85	35	50
Other Asia	230	260	195	300
Africa	5	-	40	50
Oceania	105	95	60	50
	8755	8915	8075	9475

Source: Interim Report of the Forest Industries Advisory Committee, Ottawa 1983, p. 1-12.

Table 5.

Average Age of Newsprint Paper Machines as of January 1985

	B.C.	Canada Eastern	USA	Nordic
Age(years)	12.9	23.9	16.7	18.6
Number of PMs 50 or more years old	0	26	4	0
Capacity of PMs 50 or more years old	0	1,700	225	0
% of total capacity represented by PMs 50 or more years old	0	22.3 %	4.3 %	0
Average capacity of newsprint PM, tons/yr	130,100	88,600	116,900	129,200

Source: Price Waterhouse Associates, via Pulp and Paper International 28, 1986 (3) p.23.

Table 6.

Recent Changes in Ownership in the Pulp and Paper Industry in Eastern Canada

1981

International Paper Co (New York, U.S.A.) sold Canadian International Paper Inc (Montreal, Que.) to Canadian Pacific Ltd (Montreal, Que.).

Oji Paper Ltd and Mitsui&Co Ltd (Tokyo, Japan) acquired shares in New Brunswick International Paper (Dalhousie, N.B.), a subsidiary of Canadian International Paper Inc.

Abitibi-Price Inc. (Toronto, Ont.) sold its paper mill in Thorold, Ont. to Fraser Inc. (Edmunston, N.B.).

Continental Can Co of Canada Ltd (Toronto, Ont.) sold its pulp mill in Marathon, Ont. to James River Corporation (Richmond, U.S.A.).

1984

Abitibi-Price Inc (Toronto, Ont.) sold its pulp and board mill in Jonquiere, Que. to Cascades Inc (Kingsley Falls, Que.).

Bowater Canadian Ltd (Burlington, Ont.) sold its pulp and paper mill in Corner Brook, Nfld. to Kruger Inc (Montreal, Que.).

La Cellulose du Pin S.A. (Paris, France) sold its shares (34.4 %) in Donohue Inc (Quebec City, Que.) to Société Générale de Financement (Montreal, Que.).

1985

Boise Cascade Canada Ltd (Toronto, Ont.) sold its pulp mill in Newcastle, N.B. to Repap Enterprises Inc (Montreal, Que.).

Abitibi-Price Inc (Toronto, Ont.) sold its pulp and paper mill in Sault Ste Marie, Ont. to St Mary's Paper Inc (Sault, Ont.). The main shareholders of the new company are D.C. Northam (Chicago, U.S.A.) 28.5 %, Shielding Investments (Toronto, Ont.) 28.5 %, Rauma-Repola Ltd (Helsinki, Finland) 25 %, and Nordic American Bank (New York, U.S.A.) 18 %.

Sources: Pulp and Paper International 1981-1985, Pulp and Paper Canada 1981-1985.

Table 7.

Effort to Forest Policy Reform in Eastern Canada in the 1980s

Federal Level	Provincial Level
Canadian Forest Congress: the Forest Imperative 1980.	New Brunswick cancelled timber licences and established forest management agreements in 1981.
The Banff Conference 1981. Canada's Forests: Transition to Management.	
Minister of Environment: A Forest Sector Strategy for Canada in 1981.	
Environment Canada: Policy Statement: A Framework for Forest Renewal in 1982.	
Science Council of Canada: Canada's Threatened Forests in 1983.	
Interim Report of the Forest Industries Advisory Committee in 1983.	
Federal Minister of Forestry established in 1984.	Commission Report "La politique forestière. Problèmatique d'ensemble" presented in Quebec in 1984.
Transfer of Canadian Forest Service from Environment Canada to Department of Agriculture in 1985.	Report of Nova Scotia Royal Commission on Forestry in 1984.

Table 8.

The Ten Leading Paper Companies in Eastern Canada and Finland in 1983

Eastern Canada	Annual Paper and Board Capacity in thousands tns	Control
Abitibi-Price	1933	Canadian
Canadian International Paper	1620	Canadian
Domtar	1327	Canadian
Consolidated Bathurst	1149*	Canadian
Ontario Paper + QNS Paper	795	American
Bowater Canadian	592	British
Donohue	589	Canadian
Kruger	558	Canadian
Boise Cascade Canada	500	American
Great Lakes Paper	484	Canadian

* in 1982

Source: Pulp&Paper Canada: Annual Directory 1984.

Finland		
Enso-Gutzeit	1175	all Finnish
United Paper Mills	836	
Kymi-Kymmene	755	
Metsäliitto	515	
Ahlström	477	
Rauma-Repola	470	
Veitsiluoto	440	
Myllykoski	400	
Kajaani	400	
Tampella	392	

Source: The Finnish Timber and Paper Calendar 1983-1984.

Note: The production inside Eastern Canada and Finland included. Such companies as Abitibi-Price, Domtar, Consolidated Bathurst, Enso-Gutzeit, United Paper Mills, Kymi-Kymmene, Ahlström, Tampella and Myllykoski had foreign subsidiaries in 1983. Boise Cascade Canada and Bowater Canadian are subsidiaries of big American resp. British multinationals. The number 360 is used as conversion rate from tpd to annual capacity.

Formerly published in Jussi Raumolin: The Impact of Forest Sector on Economic Development in Finland and Eastern Canada in J. Raumolin (ed.) Natural Resources Exploitation and Problems of Staples-based Industrialization in Finland and Canada. Fennia 163:2, 1985, appendix 3.

Table 9.

The Leading Pulp and Paper Companies in the World in 1985
(according to paper and board production)

International Paper, U.S.A.	5 000e
Champion International, U.S.A.	3 660
Container Corp. of America, U.S.A.	3 069
Weyerhauser, U.S.A.	3 000
Mead Corporation, U.S.A.	2 470
Georgia-Pacific, U.S.A.	2 452
Great Northern Nekoosa, U.S.A.	2 261
Abitibi-Price, Canada	2 216
Jujo Paper, Japan	2 097
Daishowa Paper, Japan	2 083
Stone Container, U.S.A.	2 028
Scott Paper, U.S.A.	2 000e
Oji Paper, Japan	1 967
Westvaco Corporation, U.S.A.	1 924e
Boise Cascade, U.S.A.	1 914
James River Corporation, U.S.A.	1 800e
Crown Zellerbach, U.S.A.	1 795
Enso-Gutzeit, Finland	1 600
Temple-Inland, U.S.A.	1 600e
Consolidated-Bathurst, Canada	1 561
MacMillan Bloedel, Canada	1 531
Stora Kopparberg, Sweden	1 522
PWA, FRG	1 300
Owens-Illinois, U.S.A.	1 300e
Honshu, Japan	1 276

e: estimate

Source: Galasso, L. & J. Pearson: PPI's Top 100 in 1984. Pulp and Paper International 27, 1985 (9), 79.

Table 10.

Industrial R&D Expenditures by Product Groups and Sources of Finance in Finland (1983)

	R&D exp. 1 000 Mk	share of value added	share of gross value	Own funds 1 000 MK	Share of finance	Public funds x)
MINING AND QUARRYING	20 169	1.1	0.6	8 620	86.8	13.2
MANUFACTURING						
Food industry	106 157	0.9	0.2	62 730	98.6	1.4
Textile, leather	17 509	0.3	0.1	14 580	94.9	5.1
Forest industry	162 608	0.9	0.3	124 900	90.1	9.9
Chemical industry	355 797	5.1	3.0	256 680	98.6	1.4
Metal & Machinery	538 170	2.6	0.9	385 280	95.1	4.9
Building materials	55 870	1.0	0.5	21 970	92.5	7.5
Information technology	617 913	9.2	5.1	366 280	89.6	10.4
ELECTRICITY, GAS & WATER	64 404	0.3	0.1	19 320	89.9	10.1
TOTAL INDUSTRY	1 938 597	2.0	0.7	1 260 360	93.6	6.4

x) Does not include loans

Source: Official Statistics of Finland via OECD. Reviews of National Science Policies: Finland, DSTI/SPR/85.52 Paris 1985 p. 106.

Table 11.

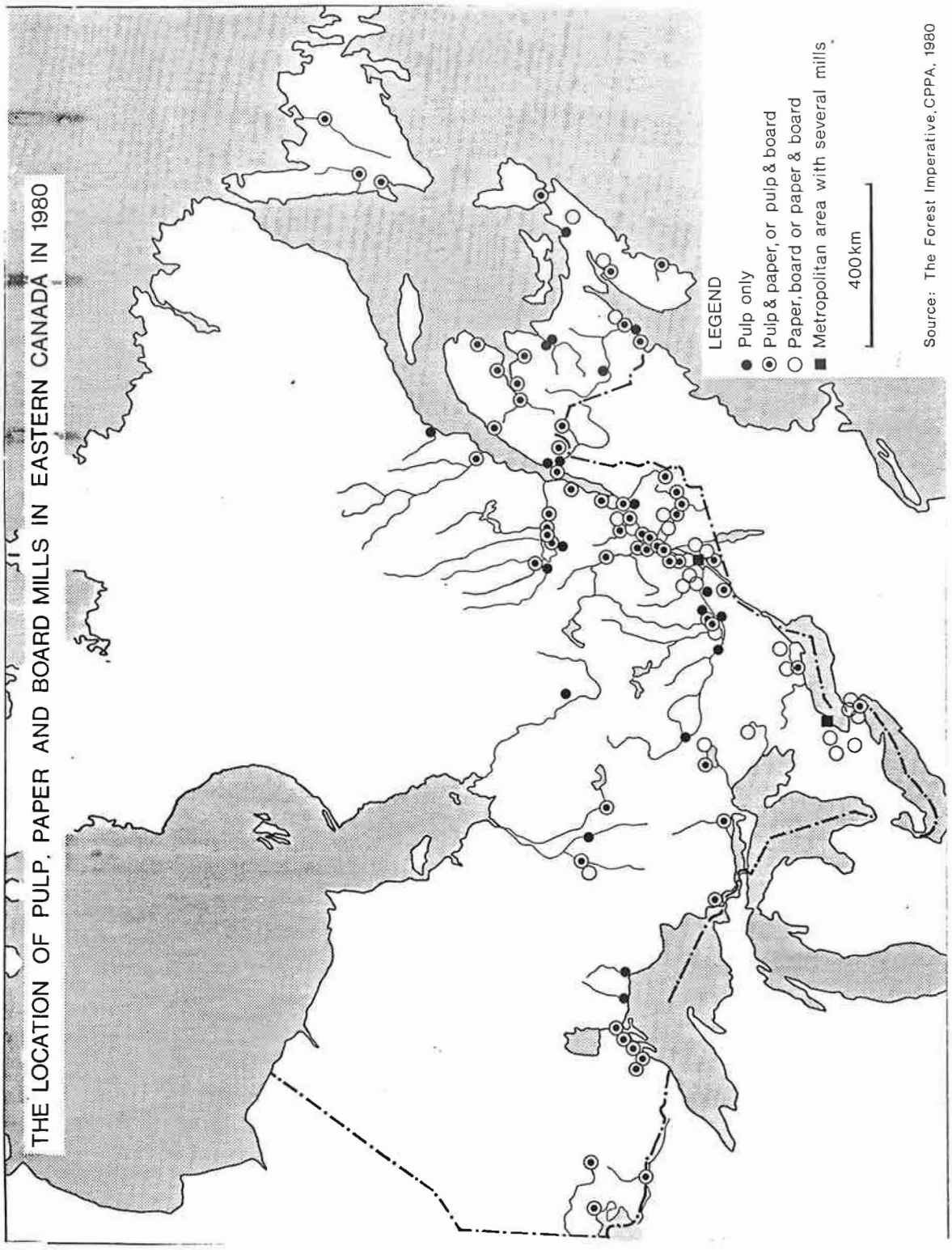
Main Finnish Direct Investment in the Forest Industries and the Supplier Industries in Canada 1985

Enso-Gutzeit Ltd	Incorporation of Eurocan Pulp & Paper Co Ltd together with some other Finnish pulp and paper companies in Vancouver B.C. in 1965. Construction of a pulp and paper mill in Kitimat B.C. in 1968-1970. Later on, the other Finnish companies sold their assets and West Fraser Mills Ltd started to acquire shares. Actually, West Fraser Mills owns 50 % of shares. Main products: lumber, linerboard and kraft paper.
Valon Kone Ltd	established a subsidiary Valon Kone Canada Ltd in Vancouver B.C. in 1973. Main products: debarkers, complete woodhandling plants.
Valmet Ltd	acquisition 65 % of shares of the paper machine division of Dominon Engineering Ltd from Canadian General Electric Co Ltd in 1984 ⟶ Valmet-Dominion Inc, Lachine, Que.
Wärtsilä Ltd	Wärtsilä's American subsidiary Appleton Machine Company established a branch in Lachine, Que. in 1984. Main products: paper finishing equipment.
Raute Ltd	acquisition of Durand Machine Company Ltd in 1984 ⟶ Durand-Raute Industries Ltd, New Westminster B.C. Main products: mechanical wood industry machinery and equipment.
Rauma-Repola Ltd	acquisition of 25 % of shares St. Mary's Paper, Sault St. Marie, Ont. in 1925. Main products: groundwood speciality paper.

Sources: News in Talouselämä, Helsingin Sanomat and Globe & Mail in 1984-1985; Pulp&Paper Canada: Annual and Directory 1985.

Formerly published in Jussi Raumolin: The Impact of Forest Sector on Economic Development in Finland and Eastern Canada in J. Raumolin (ed.) Natural Resources Exploitation and Problems of Staples-based Industrialization in Finland and Canada. Fennia 163:2, 1985 p. 425 (slightly modified).

Figure 1.



Formerly published in Jussi Raumolin: The Impact of Forest Sector on Economic Development in Finland and Eastern Canada in J. Raumolin (ed.) Natural Resources Exploitation and Problems of Staples-based Industrialization in Finland and Canada. Fennia 163:2, appendix 4. and 5.

Figure 2.

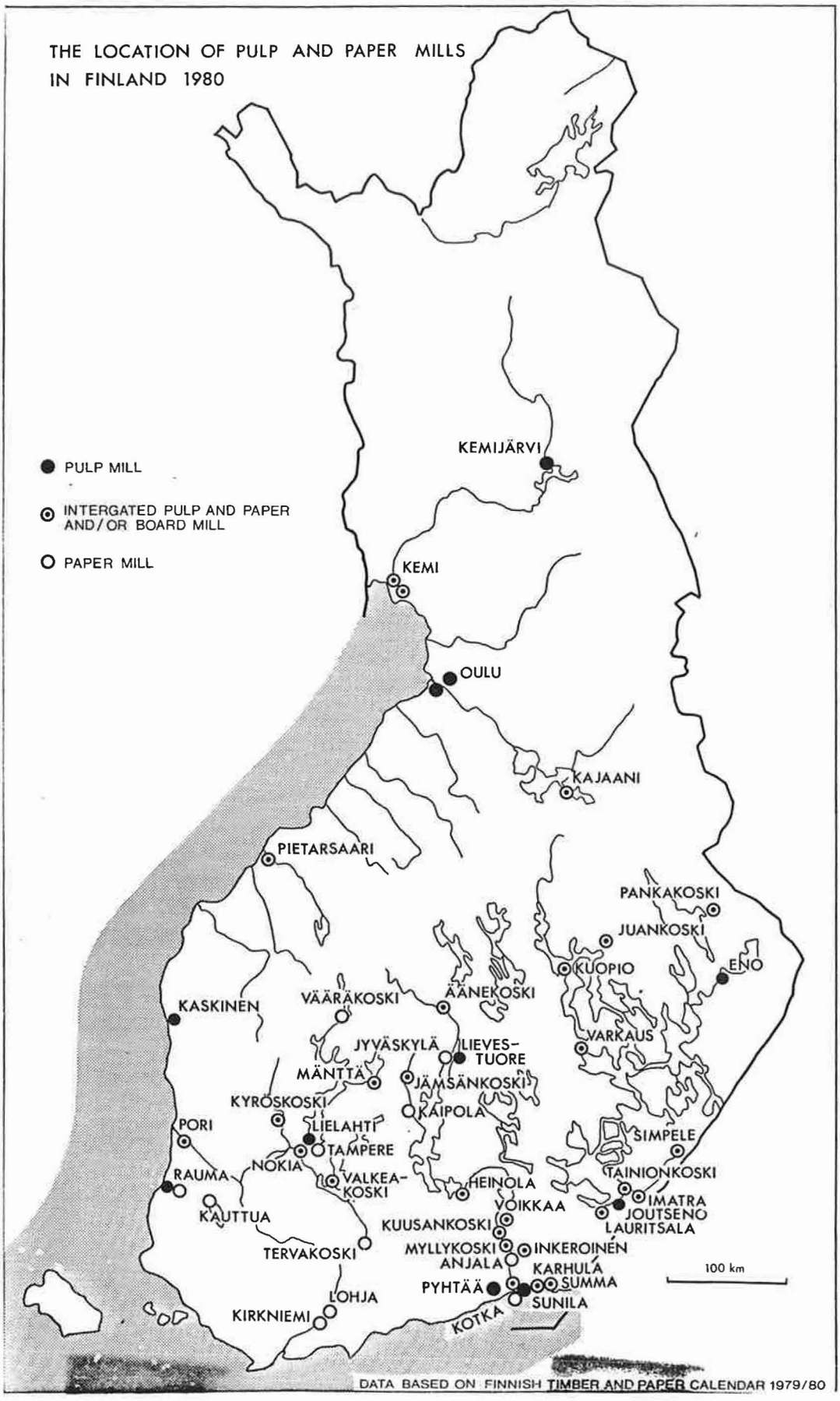
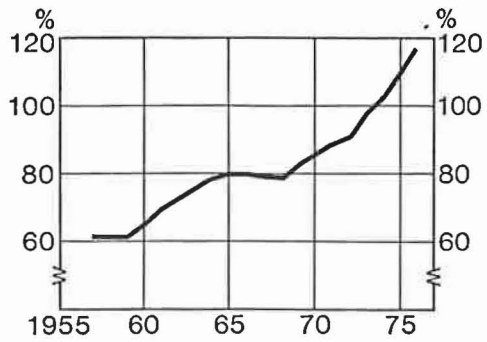
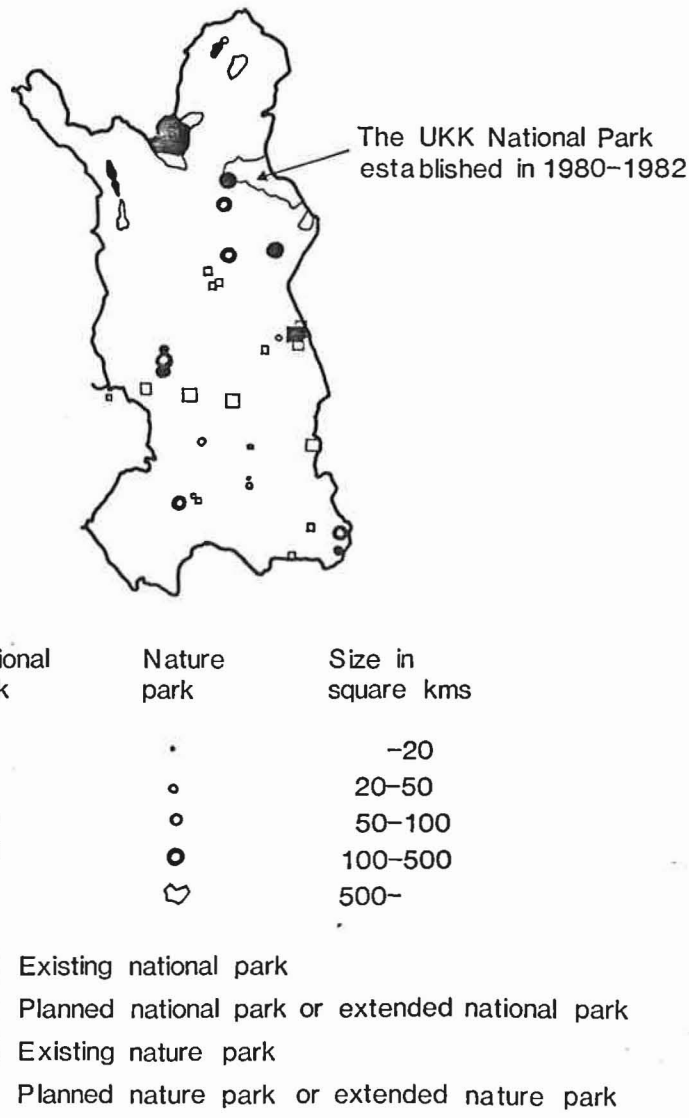

THE LOCATION OF PULP AND PAPER MILLS IN FINLAND 1980
PULP MILL
INTERGATED PULP AND PAPER AND/OR BOARD MILL
PAPER MILL
KEMIJÄRVI
KEMI
OULU
KAJAANI
PIETARSAARI
PANKAKOSKI
JUANKOSKI
KUOPIO
ENO
VÄÄRÄKOSKI
ÄÄNEKOSKI
KASKINEN
VARKAUS
JYVÄSKYLÄ
LIEVES-TUORE
MÄNTTÄ
JÄMSÄNKOSKI
KYRÖSKOSKI
KAIPOLA
PORI
LIELAHTI
SIMPELE
TAMPERE
NOKIA
TAINIONKOSKI
RAUMA
VALKEA-KOSKI
HEINOLA
IMATRA
VOIKKAA
JOUTSENO
KAUTTUA
KUUSANKOSKI
LAURITSALA
TERVAKOSKI
MYLLYKOSKI
INKEROINEN
ANJALA
KARHULA
100 km
PYHTÄÄ
SUMMA
LOHJA
SUNILA
KIRKNIEMI
KOTKA
DATA BASED ON FINNISH TIMBER AND PAPER CALENDAR 1979/80

Figure 3. THE SHARE OF ALL LOANS OF THE BIGGEST PULP AND PAPER COMPANIES IN FINLAND OF TOTAL TURNOVER, 1955-1978. FIVE YEAR MOVING AVERAGES



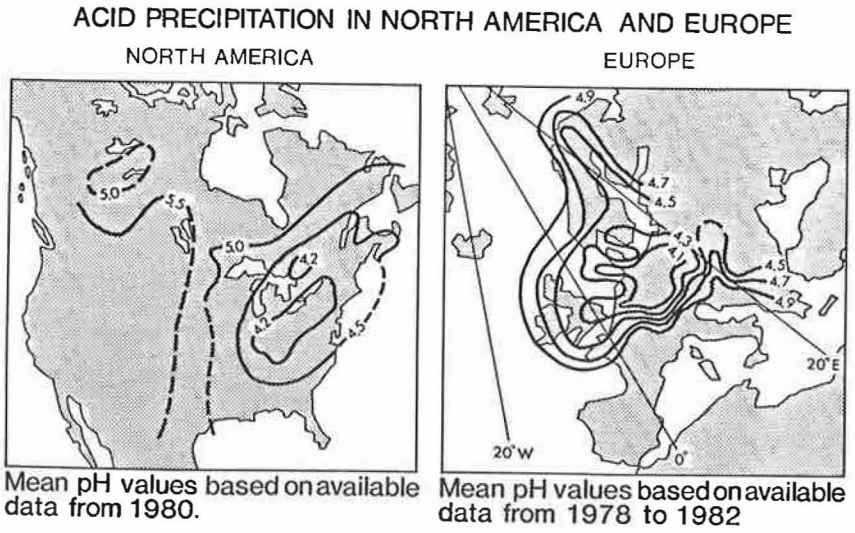
Source: Aki Palo 1979 via Seppälä & Kuuluvainen & Seppälä 1980 p. 20.

Figure 4. THE EXISTING AND PLANNED NATURE PARK AND NATIONAL PARKS IN NORTHERN FINLAND IN 1976



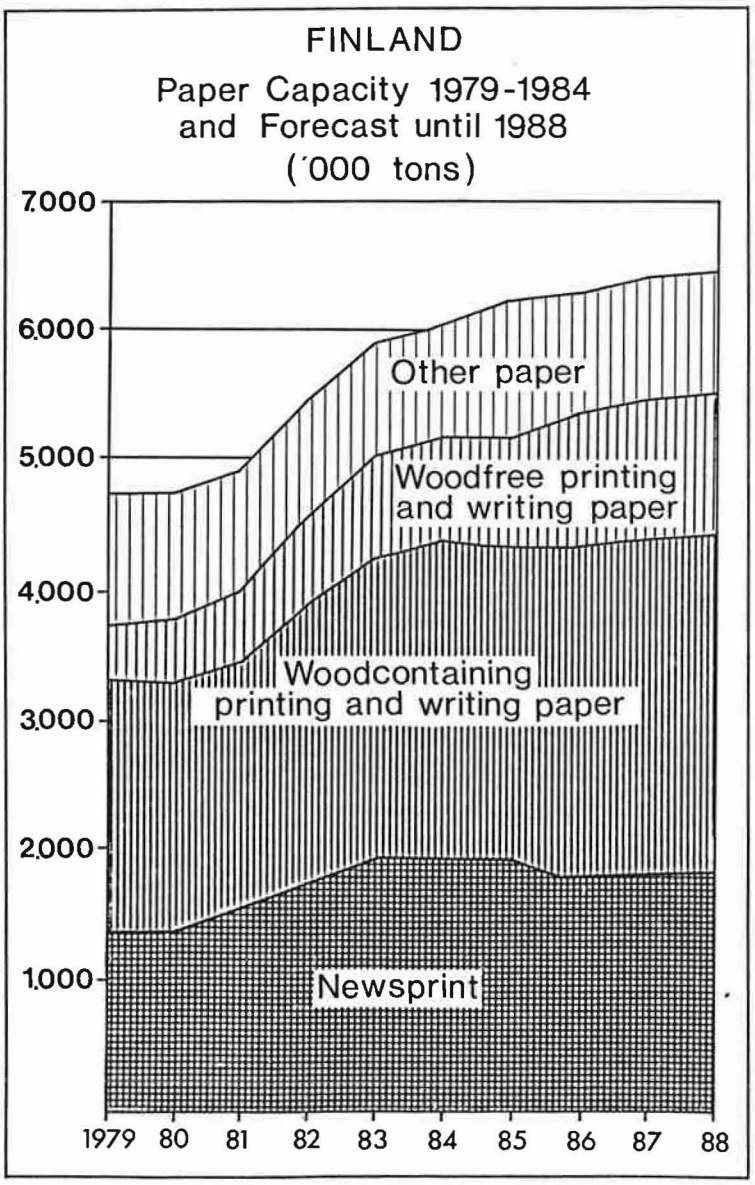
Source: The Proposal of the National Park Committee 1976, 31

Figure 5.



Source: OECD Observer 135, July 1985; 17

Figure 6.



Source: Finnpap 1984

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