Forest industry on the map of Finland

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The map of Finland would look quite different if the forest industry had not had such an important role in the Finnish national economy and society. The production of pulp, paper, sawn timber, plywood and furniture concentrated people in dozens of mill towns and industrial centres. The harvesting and transportation of roundwood, in turn, dispersed people in hundreds of rural villages in different parts of the country. Together these localities formed the settlement systems of the forest sector, in which each of the localities had a certain economic and productive role. During the first half of twentieth century this settlement system expanded with increasing production, but during the second half of the century both lumberman–smallholder villages and mill communities faced serious difficulties. The restructuring processes within the forest sector decreased jobs in forestry and industrial production, although the production volumes continued to increase. Both the growth periods and restructuring periods have created spatial inequalities between localities and regions within the settlement system of the forest sector.

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Introduction

Finland has been called a forest-sector society, highlighting the importance of forestry and the forest industry for the national economy and society in general (see Koskinen 1985; Oksa 1992). As the country's leading export sector, the forest industry has provided income for hundreds of thousands of people in almost every part of the country. The settlement system of the forest sector emerged, and it changed the spatial systems in large parts of the country. We can thus say that the generation, evolution, and restructuring periods of the forest sector have deeply influenced Finland's regional development.

The settlement system of the forest sector and its effects on regional development can be examined from several perspectives. The common way to analyse settlement patterns is to see them as functional systems where each locality has certain functional roles in the spatial division of labour of industrial production, retail, or government. In this article, the settlement system is interpreted more as a system of social exchange. This highlights social, economic, and cultural aspects instead of pure material functions and flows. In the case of the forest sector, raw material and products flowed to the industrial centres, but there was a simultaneous contra-flow in which money, services, technology, cultural influences, and political ideas dispersed to the localities in the settlement system (Koskinen 1994a: 17–19; Kortelainen 1996: 43). The forest sector's system of social exchange supported numerous localities in different parts of the country. It did not treat them equally, however, but created and deepened disparities between localities and regions.

This article presents and analyses the ways of how the forest sector affected the formation of the regional characteristics and the restructuring of settlement patterns in the twentieth-century Finland. On the one hand, the forest sector's role in regional development in the different stages of its development is examined. On the other hand, the ways of how the forest sector influenced the generation of regional differences and inequalities during the twentieth-century are analysed. The article is based on my own research work on the topic and on the results of other studies of forest-sector settlements.

The settlement system of the forest sector

The forest industry became big business in Finland in the second half of the nineteenth century. Demand grew rapidly in the already-industrialized European countries. Wood was needed for construction and paper products for communication and packaging. Improving transport techniques made long-distance transportation possible and steamships began to carry Finnish products to Western European markets. National economic and political regulation had previously prohibited the use of steam power in saw milling, but this policy changed in the mid-nineteenth century. Dozens of sawmills and paper mills emerged within a few decades. The forest industry led the rapid industrialisation of Finland's agrarian society (Kortelainen 1999b: 208–209).

Two important preconditions in the Finnish natural environment made the large-scale forest industry possible. The vast forest resources were the primary attraction, but another important natural feature was the extensive lake and river system reaching almost every part of the country. The water systems provided the only feasible transportation routes that gave companies access to more remote timber supply areas in the late nineteenth century (Mead 1968: 233–239). Logs were floated throughout the entire lake and river system to mills in downstream locations. A huge nationwide production system was constructed. It utilised forests, rivers, lakes, and people in almost all parts of the country (Kortelainen 1999a: 238).

The regionally dispersed production system supported existing settlements in large areas of the country, but it gave birth to totally new settlements as well. The spatial division of labour within the forest sector consisted of such activities as timber cutting, transport of logs, production, and transport of products, all scattered in different locations along the floating routes. In the early days, every stage of the production system was relatively labour-intensive, and a lot of workers were needed in logging, floating, loading, and production. Communities grew around each activity and a settlement system of the forest sector was formed. It reached from the remote forests and villages in upstream regions of the floating routes to industrial centres and harbours in downstream locations (Fig. 1) (see Kortelainen 1992).

Lumberman–smallholder villages appeared in the vicinity of vast company- or state-owned forests. Log-floating villages arose along the floating

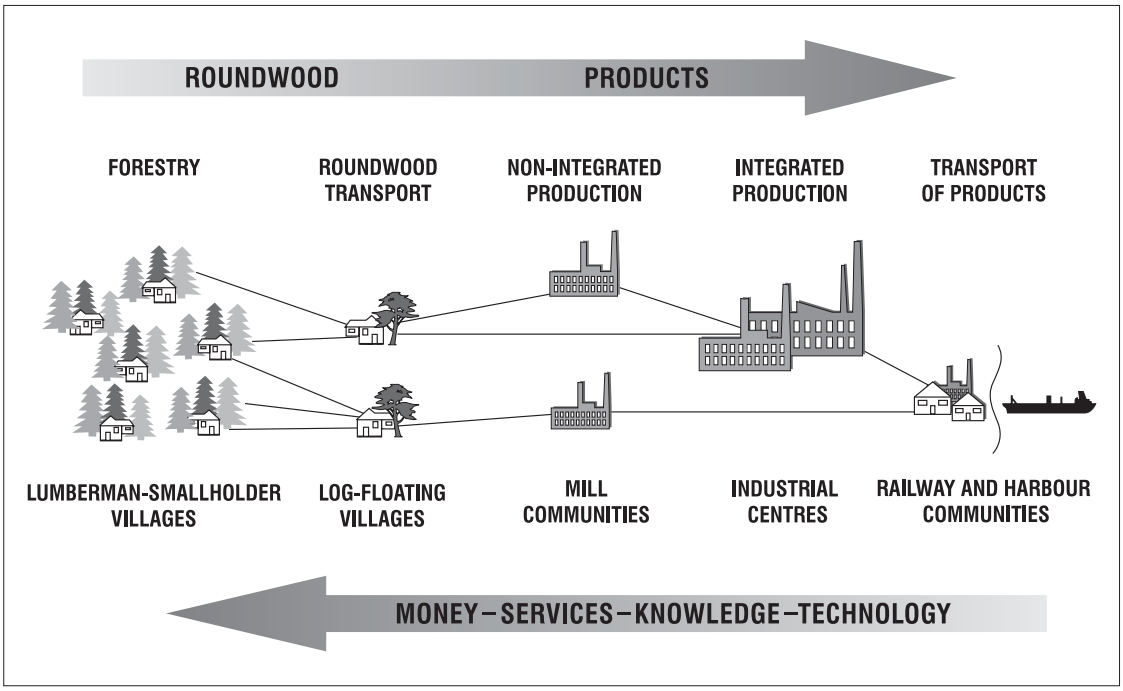

Fig. 1. The settlement system of the forest industry in Finland.

routes near log-sorting plants. Small mill communities were constructed around non-integrated and separate pulp mills, sawmills, or plywood mills, which were not integrated with other production locally. Larger industrial centres grew in locations with integrated production. In these centres, pulp and paper mills, sawmills, and other wood processing industry formed diversified complexes. There were also settlements close to seaports, where forest industry products were loaded onto ships (Mead 1968: 240–245; Kortelainen 1998: 209).

The functional role of the localities in the spatial division of labour and their position in power structures affected greatly the way how the forest sector benefited them. This, in turn, determined how social, cultural and economic circumstances developed in each community. These processes created several inequalities within the system and between the localities. Localities with integrated production and demand for highly skilled workforce benefited the most, because salaries were relatively high and the companies provided abundant services. The villages of forest workers, in turn, were in the worst position (Koskinen 1999: 226).

Forestry as a supporter of backwood settlement

When the forest sector linked the Finnish countryside to its spatial division of labour, income from forest work and from wood sales began to flow to rural villages. It has been said that there is no other country where the development of rural areas has relied on forests and forestry to the extent that it has in Finland (see, e.g., Rannikko 1999a). This connection has been strongest in the eastern and northern parts of the country (CD-Fig. 1). In southern and western Finland, agriculture has always been more important than forestry because of better soils and more favourable climatic conditions. These regions have never gained an extensive population of forest workers, because the farmers have owned most of the forests and carried out the timber felling by themselves (Rannikko 1999a: 223).

In the northern and eastern parts of Finland, where the companies and the state owned extensive tracts of forest, felling operations required paid labour. Work was seasonal, however, and had to be combined with other sources of income. An occupational combination of lumberman–smallholder thus appeared. During winter and spring, they earned their income from forest work and log floating and, during summer, they cultivated their small farms. Neither forest work or agriculture could have provided year-round livelihood for people in the villages, but together they guaranteed a modest income for tens of thousands of lumberman–smallholder families in eastern and northern Finland (see Oksa & Rannikko 1988: 221–222).

The state supported this development, carrying out several land reforms and resettlement acts during the twentieth century. In these reforms, a large number of previously landless people became landowners. Finland was among the few West European countries where the number of farms continued to grow in the 1950s. The farms remained so small, however, that men had to seek additional sources of income from forestry. The land reforms thus assured the forest industry of a supply of workers willing to accept low wages and supported the formation of lumberman–smallholder villages in the more remote parts of the country (Oksa & Rannikko 1988: 219).

The living conditions in lumberman–smallholder villages were relatively poor. The forest workers remained in an inferior position compared to other occupations until the 1960s. Companies provided them practically nothing else but a modest salary during wintertime. Work conditions in the forests were poor, and men spent most of the winter months in forest camps far away from their homes. This left their wives with an immense workload because all house and farm work rested on their shoulders (see Rannikko 1999a: 223–224).

Trade unions were weak and they had difficulties to recruit new members due to the wide dispersal of felling operations and the seasonal nature of employment. Thus, the unions could not much improve the situation in the forests and villages. Because of strong population growth, there was no lack of labour, and skill requirements were not very high either in forestry (Rannikko 1999a: 223). Companies did not have to compete for forest workers, which kept the wage level low.

Along with the increase in forestry jobs new political ideas spread within the settlement system, having impacts on the political geography of the twentieth-century rural Finland. Due to poor living and working conditions, the lumberman–smallholder villages became enclaves of the po-

litical left. The strong support of the communist party in these villages was in a sharp contrast to the traditional and politically more conservative peasant villages. This remote form of political activity has sometimes been called "backwoods communism" (Oksa & Rannikko 1988: 222; Oksa 1992: 994).

Life "in the light of the factories"

At the same time when forestry jobs dispersed in the backwoods, the forest industry concentrated jobs in large plants and communities grew around them. When the large-scale forest industry arrived in Finland, industrialists had to find profitable locations for the mills. Transportation costs and availability of energy were the main factors that affected the formation of the spatial structure of forest industry production.

The early sawmill industry in the late nineteenth century clustered at the mouths of major rivers such as Kymijoki, Kokemäenjoki, Oulujoki, and Kemijoki (CD-Fig. 1). Roundwood was floated to these points from far away upstream and sawn timber was loaded directly on ocean-going ships. The availability of water power, on the other hand, determined the location of early paper mills (see Mead 1968: 239–240). Paper production consumed a lot of energy, and the mills were scattered in different parts of southern and eastern Finland in the vicinity of powerful rapids and water falls. Later, with the expansion of the railway network, sawmills, paper mills, and plywood mills were set in the midst of rural areas, at locations where log-floating routes and railways intersected. These were favourable locations due to the prevailing transport technology, since timber could be floated to the mills and products could be transported by train to seaports (Kortelainen 1999b: 209).

Thus, in most cases, industrial sites had to be constructed in places that lacked any significant human settlement. That is how many of Finland's present industrial centres (including Kotka, Kuusankoski, Valkeakoski, Kemi, Jämsänkoski, and Myllykoski) and dozens of other localities of varying sizes appeared on the map. The majority of them had already come into being by the beginning of the twentieth century, but the growth of the forest industry gave rise to new factories and mill communities up to the 1960s (Kortelainen 1999b: 209).

As the mills were often established in sparsely populated areas, it was necessary to have a functioning community in which mill workers could live. The companies had to create these communities. They were forced to attend to questions of housing and building of public facilities and services for the workers in these communities. Water supplies, sewage systems, electricity, schools, and even law enforcement were organised by the companies in the beginning. The companies constructed, maintained, and ruled these communities (see Koskinen 1994b.)

Finnish mill communities have often been characterised by the title of a famous novel by Toivo Pekkanen (1960, originally 1932) as life "in the shadow of a factory." According to this image, mill communities were regarded as places that suffered from difficult social problems and fierce political conflicts. This picture has begun to change in recent decades. Many researchers have started to speak of life "in the light of a factory," in the words of the social historian Pertti Haapala (1986). According to this view, the standard of living in mill communities was higher than in the countryside and most of the urban settlements in Finland.

Sociologist Tarmo Koskinen (1999: 202) has argued that the industrial localities "became welfare communities before the welfare state in Finland had come into being." In addition to relatively well-paid jobs, the companies provided a wide spectrum of services for their workers and their families. Mutual dependence between workers and companies created economic prosperity and service provision in the mill communities. A good description of the social work done in mill communities in post-war Finland is provided by the publication *Teollisuuden sosiaalinen toiminta* ("Social welfare work in industry"), published by the Federation of Finnish Employers in 1948 (Keravuori 1948). It shows that in addition to economic support, which included, e.g., financial support and housing provision, companies attended to health care, sports activities, cultural services and vocational education. Many of these services were absent in most of the other localities in Finland at that time.

Nevertheless, there were great differences between mill communities in overall living conditions and benefits provided by the companies. The communities that formed the centre of the companies' management and operations obtained maximum benefits. The most distinctive division,

however, can be made between paper mill communities, which grew close to pulp and paper mills, and wood industry communities, which were formed around single sawmills or plywood mills.

Paper mill communities were the elite in this respect, with the highest income levels and standards of living. Some companies provided even such luxuries as indoor swimming pools, bowling alleys, art schools, and cinemas (Koskinen 1994b: 432). Moreover, pulp and paper mills offered relatively permanent employment and continuity from one generation to another, with the sons following in the footsteps of their fathers. In order to make paper mill communities pleasant and attractive living environments, companies hired famous architects to draw city plans and design buildings and housing stock. The association between architects and paper producers created many true pearls of Finnish architecture. The hand of the internationally best-known Finnish architect Alvar Aalto, for example, is visible in several paper mill communities in Finland (see Schybergson 1988: 41–49; Schildt 1994).

Lower wage levels, lower standards of industrial safety, and less adequate housing and living conditions characterised those communities that emerged in the vicinity of mechanical wood industry. The companies ensured only the basic necessities and nothing else, which was visible also in the more austere and less attractive built environments. Economic fluctuations, unstable labour markets, and consequent flows of migration also characterised these communities. The differences in the standards of living are still evident today: the average wage level of mechanical wood production is circa 30 percent lower than the corresponding level in the pulp and paper industry (STV 1997: 225).

Paper mill communities were better off because of their favourable functional roles in the spatial division of labour of the forest sector. Production in the pulp and paper mills required plenty of highly skilled workers, and the companies competed for them intensely. In order to succeed in this competition and keep their skillful workers, companies had to provide permanent employment, good living conditions, high-quality housing, and a wide variety of services. The requirement for professional skills was much lower and competition for the workers less intensive in saw mills and plywood mills. These companies did not have to pay as much attention to the level of services and attractiveness of their communities. That is why the light of the mill shone much brighter in paper mill communities than it did in wood-processing communities.

Decline of backwood villages

The restructuring of the forest sector started from the countryside, and its effects were most dramatic there as well. During the couple of decades after the 1950s, most of the jobs disappeared from the forestry and floating activities. This had profound consequences on the rural development in Finland. There were two main stages of restructuring in forestry (Fig. 2). First, forest work and transport were mechanised and motorised during the 1950s and 1960s, which meant a very fast and dramatic fall in jobs available in forest work. The second period of rapid change started in the late 1980s, when the multi-purpose forest harvesters started to replace forest workers.

In the early 1950s, forest work and transport were mainly carried out by utilizing the muscle power of men and horses and the hydropower of the floating routes. Forest work was manual work with frame saws and axes, and the horse was the most important 'forest machine'. Sociologist Pertti Rannikko has estimated that more than half a million men worked in forestry in the early 1950s (Rannikko 1999a: 224–227). Backwood villages

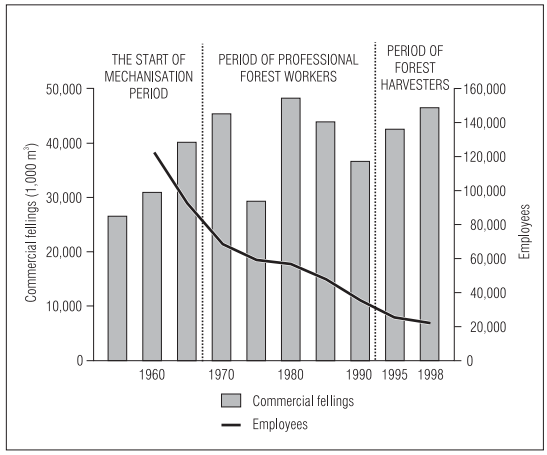

Fig. 2. Employees, commercial fellings, and restructuring periods of forestry in Finland, in 1955–1998 (MTV 1971, 1986, 1997, 1999; STV 1982, 1987, 1991).

flourished in other ways, too. New houses and farms were built, land was cleared for the fields, children were born, and schools, shops, and other services were established (Rannikko 1999a: 224–227). This began to change when new technological inventions appeared in the Finnish forests. The breakthrough of modern technology ruined the lumber–smallholding economy that sustained forestry settlements in eastern and northern Finland.

During the mechanisation of forestry, which started in the 1950s and intensified in the 1960s, tractors, chain saws, and lorries replaced the muscle power of men and horses in the forests and along the floating routes. Mechanisation began a little later in Finland than in the other leading forest countries. However, when it really got under way, it happened extremely fast and dramatically, and the number of men working in forestry declined rapidly (Rannikko 1999a: 225).

The former forest workers lost a major part of their income when the jobs in forestry became scarce. Their small farms could not provide a sufficient income for their families, and the only possibility was to seek work elsewhere. Jobs were hard to find nearby, and many former forest workers had to move to places far away from their home regions. The restructuring of forestry was one of the main reasons for a massive migration wave known as the 'Great Move'. Between the years 1965 and 1975, the working age population of rural villages in eastern and northern Finland thinned out as people moved to cities in southern Finland and Sweden. The effects of this migration were especially strong in the lumberman–smallholder villages (see Oksa & Rannikko 1988: 227–228; Rannikko 1999a: 225–226).

Modern technology made forest work a year-round profession distinct from agriculture, and, as a consequence, the lumberman–smallholder disappeared from the Finnish forests. He was replaced by the professional forest worker, who did not necessarily live in a remote village. It was usual that the modern forest worker lived in a municipal centre, driving daily to the logging sites. Some of the lumberman–smallholder villages found a role in providing housing for modern forest workers who commuted daily to wood-cutting sites in the surrounding regions. The State Forestry Board built apartments for the forestry workers to rent in these villages (Oksa 1992: 994).

Most of the traditional and remote lumberman–smallholder villages, however, lost their productive roles and became dwelling places of pensioners and the unemployed. Local policies also speeded up the depopulation of these villages. Municipalities started to concentrate housing and services in their local centres in the 1970s, attracting people to move to these centres – to the vicinity of other people and services. Today, the most typical inhabitant of a remote village is an elderly grandmother living alone in her cottage, her children scattered in towns and cities in different parts of the country (see Oksa 1992: 994).

The decline of forestry jobs slowed down in the 1970s. The situation continued to be relatively stable until the mid-1980s, when a new stage of restructuring began (Fig. 2). Rates of employment plunged within a few years, and there were more forest workers unemployed than employed in many areas in northern and eastern Finland. The reason for this was a further rationalisation of logging operations through the introduction of forest harvesters to the logging sites. Timber harvesting carried out by forest harvesters increased fast: in the mid-1990s, only one-fifth of loggings was done by a forest worker with a chain saw (Rannikko 1999a: 224–226).

Pertti Rannikko (1999b: 227) gives an illustrative example of the process that he calls "a silent tragedy of outlying villages." He shows how one lumberman–smallholder village, Kontiovaara, in eastern Finland, went through the restructuring period. After World War II, the village flourished and the number of inhabitants increased along with large-scale timber felling programmes in the region. When the restructuring of forestry began in the mid-1950s, the number of inhabitants in the village started to decrease immediately. In 1975, only 40 people remained, instead of the 280 inhabitants in 1955. The decline slowed down, but continued steadily. In the late 1990s, only nine people lived in the village in a few scattered houses.

Kontiovaara might be one of the most extreme examples, but it is not a unique case. All remote lumberman–smallholder villages have undergone similar development paths. The rise and fall of Finnish backwoods have been tightly connected to the history of forest work. In recent decades forestry has no longer been able to support life in remote settlements, and it seems now that these backwood villages are gradually dying and disappearing from the map of Finland.

Deindustrialisation in mill towns

The mill communities and industrial centres have also experienced several restructuring periods. The companies withdrew gradually from their community obligations and restricted their activities within the mill gates. The transfer of the companies' service provision to the public sector started already in the early twentieth century when many mill communities became autonomous and attained municipal status. The role of the companies as important providers of diverse services continued up to the mid-1970s, however. The period thereafter has been called a "welfare-state stage" of mill communities because the companies transferred their community responsibilities to the municipalities, the local representatives of the welfare state (Koskinen 1994b: 429).

The world market changed when the growth of the traditional markets slowed down and international competition intensified in the forest industry (see Watt 1994). The harsher competitive international environment forced the companies to seek new ways of cutting their costs. The described rationalisation of forestry was one reform that aimed to reduce expenses. The other one was to cut down the community services in mill communities. The rapid growth of the welfare state and of the public sector enabled this to be done (Kortelainen 1999b: 212–213).

International competition has compelled companies also to rationalise and modernise production, which has meant reduced demand for labour. Although the traditional 'smoke-stack industry' in the Western industrial countries has been cutting back on jobs since the 1960s, this trend begun in Finland as recently as in the early 1980s. Firms have tried to cut costs by rationalising production and investing in new technology. Jobs in the forest industry have therefore declined in spite of heavy investments and growth of production volumes. Old mills have had to give way to larger and automatic production lines. Not even sizeable investments have resulted in new jobs (Koskinen 1994b: 433; Kortelainen 1998: 205–206).

Due to these changes, the life in mill communities has altered considerably during the recent decades. Mill closures and lay-offs have created an atmosphere of uncertainty in these localities. Previously, the companies represented continuity for the mill community residents, often providing a lifelong job. After the 1970s, nothing was certain or safe anymore: many lost their jobs and none could take employment for granted. Moreover, in many paper mill communities the transfer of community responsibilities to local administration meant decline in the quality of services and the overall quality of life. This process has been described as "a shift from the light of the factory to the shadow of the municipality" (Koskinen 1989: 188). In wood industry communities this change was not so negative, because inadequate housing conditions, for example, had improved when municipalities took over public housing.

Development paths of mill communities

In the 1980s it was common among researchers to predict that many mill communities would wither away due to deindustrialisation. Even though industrial communities became problem regions characterised by unemployment and outmigration, not even the most remote mill communities were abandoned (Kortelainen 1999b: 213). In order to give a more versatile picture of contemporary Finnish mill communities, four development types can be distinguished.

First, there is a group of *merging mill communities*, which have become parts of larger city regions. Some of the mill towns have gained new appreciation as attractive residential areas. In this way, many old mill communities within larger city regions have functionally merged with adjacent urban areas. Their social and political structures have changed profoundly, because newcomers have usually represented service sector and middle classes whose behaviour and worldviews differ sharply from the traditional ways in mill communities (see Konttinen 1994).

Second, some of the localities can be described as *diversified mill communities*. This means that the previously one-sided economic basis of these communities has diversified. Many of the larger industrial towns have become administrative and service centres, and other manufacturing branches have gained importance in many places. One example is Äänekoski in Central Finland, where Nokia and other electronics companies have become employers almost as important as the local pulp mill during the 1990s (A portrait… 1999: 109). There are also some examples of small, attractive mill communities that have attracted artists and artisans who have given these places a totally new look (Kortelainen 1996: 137).

Third, there are *remaining or even reviving mill communities* that have managed to keep their position in the industrial system. They have received new investments and kept their productive role. In spite of investments, the number of employees has usually decreased. In Uimaharju, a small mill community in eastern Finland, the number of pulp mill workers decreased although the production volume quadrupled during the early 1990s (Kortelainen 1999b: 213). There are other examples, however, where the decline of jobs has turned into a new growth stage. In Vuohijärvi, a tiny community in south-eastern Finland, the local veneer mill (formerly plywood mill) was almost bankrupt in the late 1980s. It revived, however, and the number of employees increased from below 100 to about 170 (see Kortelainen 1998).

Fourth, there are *marginalised mill communities,* which are remote and declining. They have lost their role in the production system or their role has become less important. Some of the communities have lost the mill that previously formed their economic basis. In the other marginalised communities the number of jobs is gradually decreasing. The fate of these localities resembles the fate of the lumberman–smallholder villages in many ways. The population is ageing, unemployment levels are high, and a great deal of the houses are empty (Kortelainen 1996: 137–138).

Conclusions: regional development and the forest sector

Forestry and the forest industry greatly affected the regional development and changes in Finland during the twentieth century. The role of the forest sector changed several times. Localities based on the forest sector formed an expansive part of the settlement system in the first half of the twentieth century. By contrast, most of them have faced problems in recent decades. Three periods can be distinguished. They all created different types of spatial inequalities between localities and regions.

The first phase started in the late nineteenth century and continued to the 1960s. During this time, the forest industry had an active role in creating new localities and dispersing settlement to the more remote areas of the country. The most significant regional difference was formed between rural areas and towns, because overall living conditions in mill communities were much better than in lumberman–smallholder villages. Distinct differences also existed in living standards between paper mill communities and wood industry communities, however.

During the second phase, from the early 1960s to the late 1970s, forest sector had a role as a concentrator of population. The restructuring of forestry caused depopulation in rural areas, but, concurrently, the jobs in the forest industry increased, concentrating people in industrial centres. This phase even deepened the uneven relationship between rural and urban areas. While industrial localities flourished with heavy investments and increasing numbers of jobs, the mechanisation of forestry ruined the economic base of numerous rural villages in eastern and northern parts of the country.

In the third phase, the forest sector had lost its role as a supporter of settlement growth. During a couple of recent decades, decisions made by the forest industry companies have caused a decline both in jobs and population in almost all localities and regions. Although the forest sector is an important economic actor, it has lost its role as an engine of regional development in contemporary Finland. Lumberman–smallholder villages are faced with extinction, emptying the backwoods of eastern and northern Finland. Dozens of mill communities still exist in various parts of the country, but they are either declining or becoming more diversified (CD-Fig. 2).

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