

Development of forest sector in the Arkhangelsk oblast during the transition period of the 1990s

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The Arkhangelsk oblast has long been one of Russia's most important forest industrial regions. This paper analyses the changes in accessibility of forest resources and forest commodity production during the transition period in the 1990s. Special attention is given to firm restructuring, active roles of domestic capital and the different survival strategies that have been developed by industries in the region. Further analysis deals with signs of economic recovery in the forest sector due to the processes of restructuring, modernisation and self-organisation.

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Introduction

The shift from central planning to a market-based economy in Russia culminated with the dramatic economic and political reorientation that began in the 1990s. This transition towards a market-oriented and outward-looking economic system led by private sector has created new challenges and opportunities. Industries have been affected mostly by changes connected to the process of 'market economy building'. It has become clear that the transition from one type of economic system to another within forest sector has had a profound impact on its previously designed socio-economic organisation, and has been especially hard on people who are dependent on it as their only means of livelihood. The forest sector may not be the biggest contributor to the economy of the Russian Federation overall, but it plays a significant role in the economy of many of its regions, particularly in the Arkhangelsk oblast¹. It employs up to 40–45% of the oblast's labour force and comprises up to 60% of the region's industrial output.

The analysis of Russia's period of transition in the 1990s illustrates the fact that it has been proceeding with a wide range of variations combining features of the old communist system and the

adoption of a new. Some suggest that this process has been deeply embedded in the nature of the socialist system (Dingsdale 1999; Hamilton 1999) and that the legacy of the communism has been only partly removed, and instead has merely been reworked in a complex way (Smith 1997). Others say that reforms have actually ended the old 'command economy' but have instead succeeded in the creation of only a very limited market-based economy, or have not been able to create anything at all (Brodin 2000).

It is clear that the development of a specific political, institutional and societal system is deeply embedded in the country's past and is shaped by its historical, cultural, political and economic experiences and legacies. Such a radical change as a transition to market economy and democracy cannot immediately alter people's existing perceptions, structures and behaviour, derived under 74 years of Soviet regime. Yet, clearly one of the positive outcomes of the transition is the removal of the former domination of the centralised state over its regions and local communities, allowing regional actors to become more independent in establishing networks and connections across the space at all levels (including 'global-local' interdependence). The transition has resulted in a tremendous shift in the division of political and eco-

conomic power among the state, regional and local governments and other actors (Dingsdale 1999). Therefore, different types of strategies have been employed by local or regional actors while taking into account the advantageous features of the regional economy and making greater use of established and re-established organisational structures and networks (Hamilton 1999).

After a decade of transition, the forest sector is still undergoing complex changes. Numerous scholars have pursued studies of the economic transition of the Russian forest industry. The International Institute of Applied Systems Analysis (IIASA) has made one of the most comprehensive European analyses of various aspects within the Sustainable Boreal Forest Resources project (Carlsson et al. 1999, 2000). The forest sector development of the European North has been reviewed recently in several research attempts (Backman 1997; Piipponen 1999; Layton & Pashkevich 1999, 2000; Myllynen & Saastamoinen 2000; Nilsson 2000). Despite regional analyses of forest sector development in the European North since the Soviet period, very little information exists about the results of recent development in the Arkhangelsk oblast's forest sector, which long served as one of Russia's most important timber exporting regions. This paper analyses changes in the accessibility of forest resources and industrial output, including the spatial organisation of wood-processing industries and their current networks. Attention is also paid to the variety of interactions between different economic actors in the process of reshaping the previous structural and spatial organisation of the forest industries.

Forest industries before and during the Soviet period

The 17th century can be considered a beginning of commercial logging activities in the region, the main centres being the cities of Arkhangelsk and Onega. However, the turn of the 19th century was the true starting point for the development of the wood-harvesting² and sawmilling industries (Layton & Pashkevich 1999: 34). During the 1930s and 1940s, Arkhangelsk oblast began its development as one of Russia's major forest industry regions as its previous sawmilling capacities were complemented by pulp and paper production (Fig.1).

Before the October Revolution of 1917, the main sawmills were located at the mouths of the main navigable rivers in four major clusters. There were no sawmilling activities in the timber harvesting areas and all of the logged timber was transported (floated) to the cities of Arkhangelsk and Onega for further manufacturing. During the Soviet period, new export sawmills were also set up at the ports of Mezen and Narjan-Mar at the mouths of the Mezen and Pechora rivers. Traditionally, logging has been practiced along main transport routes, such as rivers and railways, which is why logging activities became increasingly concentrated in the southern and western parts of the oblast. In the 1960s, more than 50% of the total harvested timber was derived from the basin of the Northern Dvina and most of it was free-floated down the river to the Arkhangelsk industrial centre³ (Layton & Pashkevich 1999: 35). Other river basins situated in the south of the oblast (Vycheгда and Viled) supplied timber that was transported through Kotlas by rail to the Kirov and Vologda oblasts, and even to Moscow or St. Petersburg. This pattern is still evident today, but there is clearly a shift in logging activity towards the northeastern and eastern parts of the region (Serebryanny & Zamotayev 1997: 204).

The output of the Arkhangelsk oblast timber industry became very diversified with the introduction in the early 1930s and again in the 1960s of the 'upper echelons' of the forestry sector – i.e., the main branches of the chemical wood-processing industry, such as pulp and paper milling and wood hydrolysis (Layton & Pashkevich 1999). During the Soviet period the main centre of the timber industry was Arkhangelsk itself, annually producing some 50–55% of the sawn goods, 55–56% of the wooden packaging, and about 70–75% of the oblast's furniture production (Layton & Pashkevich 1999: 36). Other emerging industry centres in the oblast included the towns of Severodvinsk, Onega, Mezen, and Narjan-Mar. The expansion of sawmills and wood-processing plants were thus brought closer to the raw material bases during the 1960s.

Post-Soviet changes and forest industries today

Forest Resources

For more than 90 years, industries operating in the region were heavily dependent on the forests

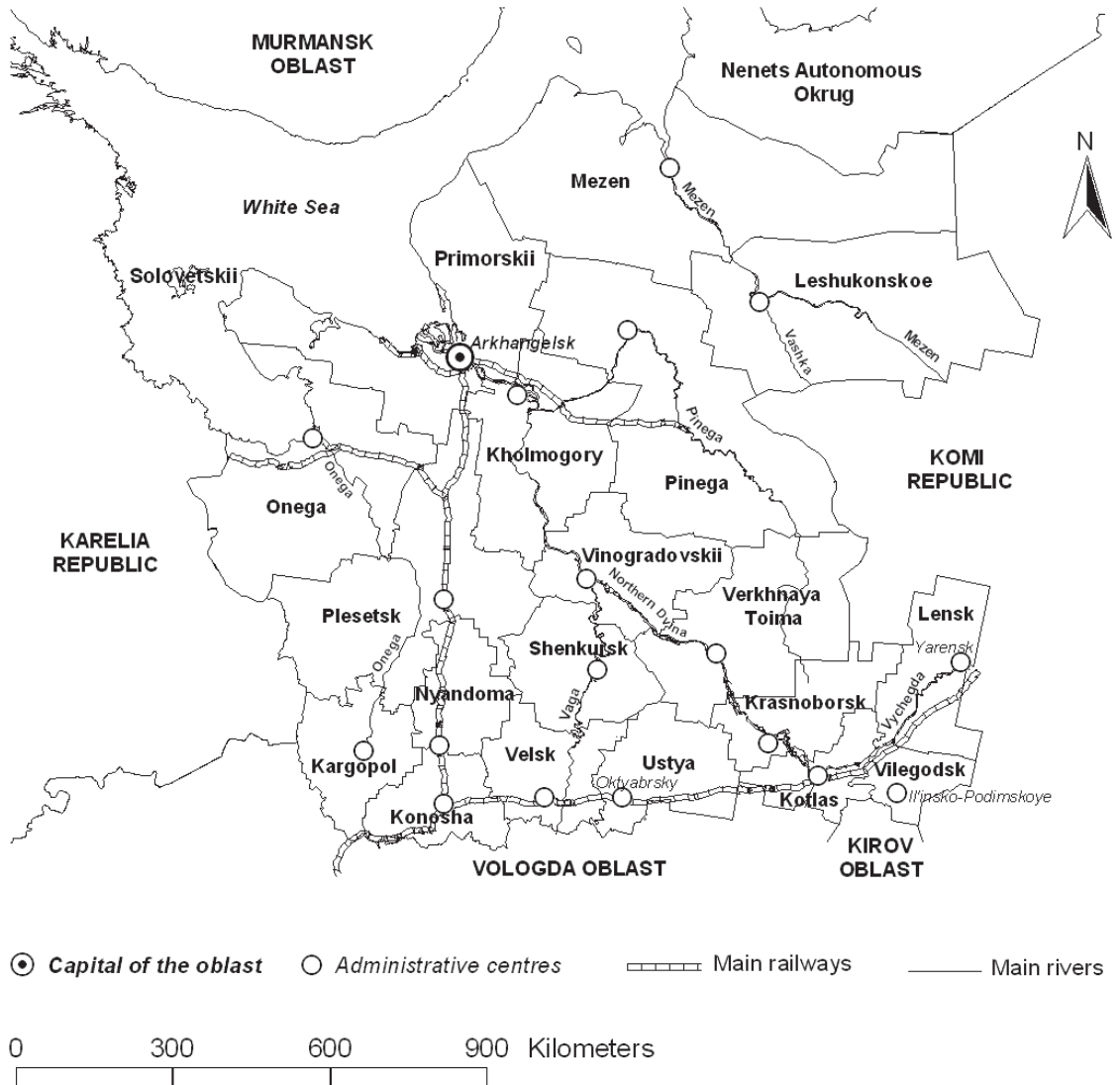


Fig. 1. Administrative map of the Arkhangelsk oblast (BASIS 1999).

along the main railroads and waterways. In the 1980s, some 23% of all exploitable coniferous forests had been exhausted, especially in those forest management units located along the Arkhangelsk–Konosha–Kotlas railway (Carlsson et al. 1999; Departament... 2000a). Although the extensive taiga forests in the central and southern parts cover 19 million hectares, potentially exploitable forests are distributed unevenly among the oblast's districts in areas distant from the previously established road infrastructure

(Serebryanny & Zamotaev 1997: 204). However, in 2000, the growing stock of the Arkhangelsk oblast's forests was estimated at 2.4 billion cubic meters, which accounted for almost 2% of Russia's growing stock (Chuiko 2000: 7). The oblast, together with the Republic of Komi, contains one-third of the forest resources in the European part of Russia (Layton and Pashkevich 1999: 31). In recent years, the region has also accounted for a quarter of European Russia's total wood harvest.

One of the problems affecting the present development of forest management in the Arkhangelsk oblast (and the Russian Federation) is lack of stability in terms of its operational structure (Carlsson et al. 2000: 24; Gubnitsyn 2000: 2). The previous system of forest management has been undergoing reorganisation for several years and is still not complete. This process should theoretically finalise the adoption of the new laws, affecting the speed of transformation of forest management practices, but a great deal of uncertainty still affects the system.

Nowadays, regeneration of forestland that was previously clear-cut is dependent on the amount of money allocated to the state silvicultural agencies from various sources (federal and local administration budgets, forest management's own assets, etc.). In the absence of funds for reforestation and other silvicultural measures, the less desirable broad-leaved species will prevail in the oblast's growing stock (Carlsson et al. 1999; 10). Forecasts predict that when young stands (with a total share of 4.6 million hectares, or 23% of the forest resources) come into maximum growth in the beginning of the twenty-first century, the total annual forest regrowth in the oblast will increase from 20 million m³ to 25 million m³ (Trubin 2000b: 2). This will offer significant potential for industrial use of wood that would become even larger with the reinforcement of the silvicultural measures. Federal budget subsidies are, however, not the solution. The forest management units will continue to work towards the adoption of a longer-term sustainable forest policy to secure revenues from their industrial activities. Among other debated issues is the question of private forest ownership, which is still an uneasy one. Some argue that no forestland should be privatised (Carlsson et al. 1999: 8). Others suggest, however, that by the first half of the twenty-first century, loggers will be allowed to own the forests they operate, 15–20% of the total area (Trubin 2000b). In general, private ownership will lead to a higher responsibility for the forest use and over the performance of the silvicultural measures. Thus, along with the other measures already taken towards more sustainable forest utilization, it should ensure the quality of raw material supply in the near future.

The period of development of the forest sector analysed here has been strongly affected by the following factors: 1) a continuous decrease in the availability of exploitable forests located in geo-

graphical proximity to the main processing centres, and 2) the impacts of the structural and dynamic organisation of the secondary forests altered by long-term harvest operations in those forests. The physical and economic accessibility of the oblast's forest resources has been challenged during the transition period also by the fact that they finally regained their market value absent during the Soviet period of development (Söderholm 2001: 369). Clearly, much of the oblast's potential forest resources are not yet realisable by the forest industry, because of the difficulties experienced by the logging industry and forest management practices. However, recent positive performance of the forest sector will likely lead to an improvement of forest regeneration practices (Backman 1999: 466; Nilsson & Kleinhof 2001: 177).

Transport Networks

Traditionally, the Soviet forest industries (saw, pulp and paper mills) have been built in locations with a relatively well-developed transport infrastructure optimal for sustaining a significant domestic timber supply (a pattern similar to Scandinavian forest enterprises (Myllynen & Saastamoinen 2000)). As timber stocks became depleted, logging activities moved from the existing transport routes and transportation costs became a constraint (Nilsson 2000). Thus, drastic economic changes, resulting in rising costs of raw material production and lack of necessary infrastructure investments to sustain productivity, can be seen as a major negative outcome of the transition period.

The prohibition in the 1990s of free flotation due to its negative environmental impact resulted in roads becoming the sole means of transportation for many wood-harvesting enterprises located in the upper parts of the Pinega, Onega and Vychegda rivers. Another negative outcome of the transition was the collapse of road building in 1993–1996 when a complete abolition of state funding, which has previously supported loggers, took place. Today, logging enterprises must bear the expenses alone, without any state investment (Backman 1999: 454). In the former Soviet Union, some 25–45% of the money invested in logging enterprises was spent on the construction of log haulage roads and purchase of transport equipment. Thus, the logging enterprises' lack of such financial resources led to major losses that

have been estimated at 2.5–3 million cubic metres of timber annually (Orlov 2000). Future development in the forest industry is heavily dependent on the improvement of existing infrastructure and the creation of new roads. The regional government, the “Regional Department of Road Management” (*Arkhangelskavtdor*) and the Union of Forest Industrialists (*Soyuz lesopromyshlennikov*) have together been the main initiators of a program of development in this direction.

During the 1990s, forest resources were exploited along the existing road infrastructure, which today has further lengthened the overall mean distance of timber transportation by 60–80 kilometres (over 100 kilometres for some enterprises). In early 1997, the annual programme “On construction, reconstruction and maintenance of the roads”⁴ was developed, partly financed by means of a regional road fund (Orlov 2000). The existing road network generally lacks hard surface, meaning that modern vehicles operating at maximum carrying capacity and potentially high speed cannot be used on the roads year round. Most of the roads have not been designed to withstand this increased pressure, as they are often wooden-planked, narrow gauge railway, ice or dirt tracks, very few being of permanent character (Trubin 2000a).

The most important role in the development of river transport is played by the Northern Dvina, which connects the administrative centre, Arkhangelsk, with settlements along the river. In terms of the volume of forestry goods transported by water, the Northern Dvina river system is in third position in the Russian Federation (Layton & Pashkevich 1999). Most of the logging companies that rely on rivers as the main means of transportation have been investing considerable sums of money in deepening the riverbed. However, the complete collapse of the system that previously subsidised this practice has also resulted in the Northern Dvina becoming ever more shallow through sedimentation (Serebryanny & Zamotaev 1997). This hampers the delivery of timber by river ships, its rafting from up-river areas and its handling in the port (Brodin 2000).

Since the beginning of the transition, logging enterprises relied on the existing road and river network due to the lack of funds for introducing new patterns of transportation. As the forest sector recovers, pressure on the existing infrastructure increases. Loggers have found themselves in

a very difficult position since the economic situation for most of them remains difficult, and only few enterprises are actually able to allocate enough funds for the further improvement of quality and quantity of the infrastructure. Therefore, a vital cooperation among regional administration, road-construction firms and industrialists has been established in order to reduce the cost burden on the logging enterprises. Better accessibility of the forest resources due to an improved transport infrastructure would lower production costs and thereby stimulate market performance of the forest sector.

Forest Industries Today

Today, the oblast’s forest sector comprises of a total of 1341 enterprises including 582 wood-harvesting units, 728 woodworking enterprises (including sawmills, woodworking factories, furniture factories and a veneer factory), and 31 chemical wood-processing enterprises (3 pulp and paper mills, 2 hydrolysis factories, 1 pulp factory and 25 other plants belonging to the forest chemical industry) (Pashkevich 2001: 105). It should be noted that some 43% of the total wood-processing enterprises are located in the regional centre, Arkhangelsk. Lesser centres are at Novodvinsk, Onega and Kotlas. Fig. 2 locates principal logging enterprises, together with major manufacturing facilities, along the two main railways including (N–S) Permilovo, Plesetsk, Shalakysha, Konosha, and (W–E) Velsk, Shangaly, Kotlas, Koryazhma.

Taking 1990 as the base year, a decline in the outputs of all major forest commodities is evident and often drastic (Table 1 and Fig. 3). The whole forest sector is undergoing a deep economic crisis and the financial position of many forest-based industries is unstable (Backman 1999). Decline in the production of main commodities can be partly explained as a result of the previously designed system, which has been neither economically effective nor sustainable. The environment in which the forest sector operates has been altered by swift introduction of market reforms such as rapidly rising energy prices and transport costs as a result of price liberalisation, and complete and abrupt abolition of state subsidises for logging activities and forest management practices. The type of market economy that has been developed today cannot generate the financial resources needed to compensate for those previously supplied by the State.

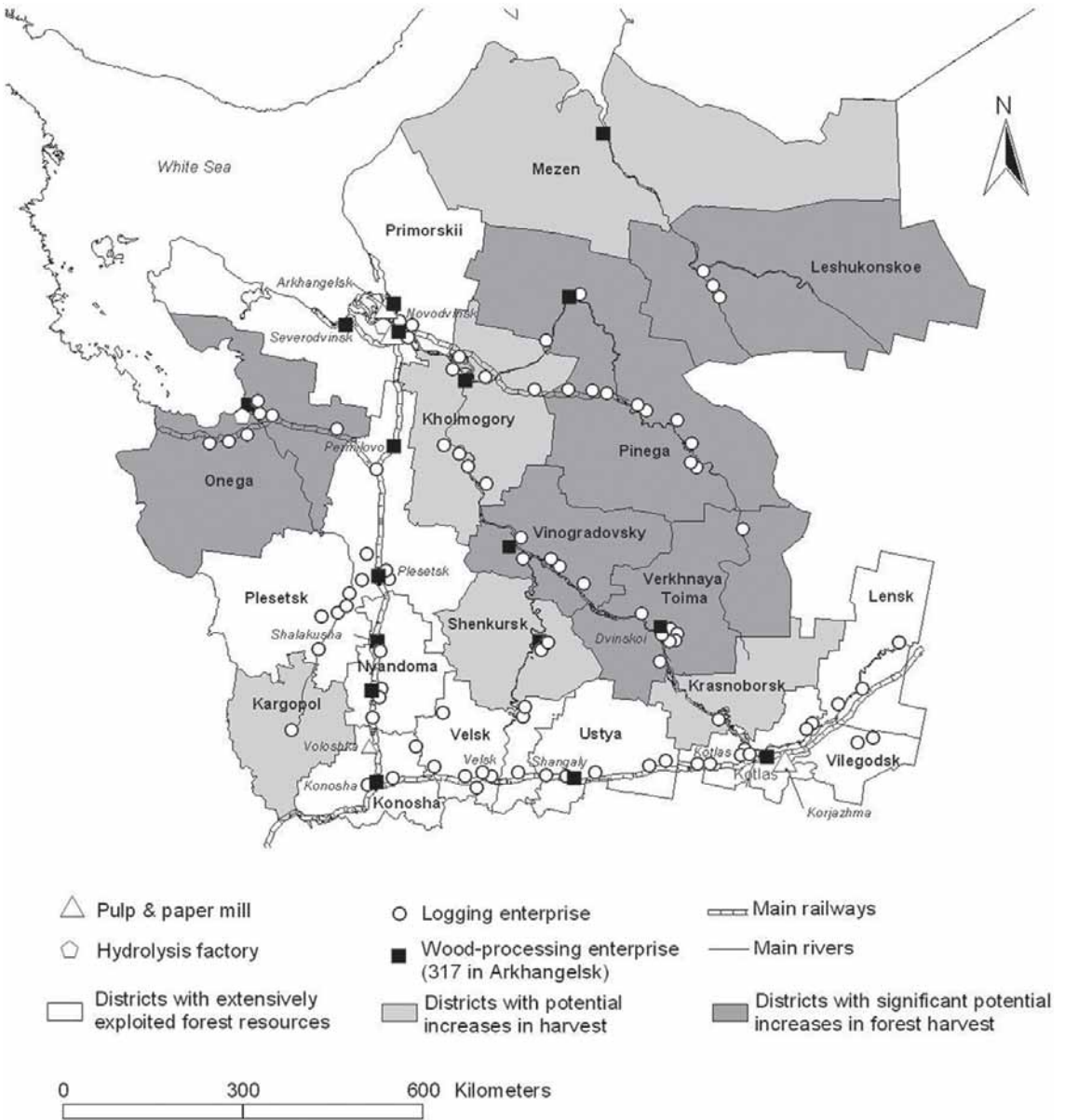


Fig. 2. Location of the principal forest-based activities in the Arkhangelsk oblast in 2000 (Department... 2000a, 2000c; Pashkevich 2001).

Since 1998, the Arkhangelsk oblast forest sector has shown signs of recovery. During the period 1997–2000, most of the wood-harvesting enterprises benefited from privatisation and linkages to powerful wood-processing enterprises (Grevtsov 2000b; Kondratev 2000a, 2000b). Considerable amounts of capital have been invested

in order to modernise logging machinery, provide firms with fuel and allocate funds for seasonal felling activities. Therefore, the harvested volumes began to increase again in 1999. The dynamics of the total oblast timber harvest over the past 10 years reveals that the decline in production began in 1990–1991, falling from 22.6 million cu-

Table 1. Volume of wood harvested and forest industry production in the Arkhangelsk oblast during 1990–2000 (Goskomstat... 1991; Departament... 2000a, 2000b).

Year	Total wood harvest million m ³	Sawn goods 1000 m ³	Pulp 1000 tons	Paper 1000 tons	Cardboard 1000 tons	Chipboard 1000 m ³	Fibreboard million m ²	Plywood 1000 m ³
1990	22.6	5011.0	2154.3	396.5	628.1	149.4	22.4	50.4
1991	18.5	4096.9	1881.2	364.4	559.4	171.8	22.1	53.9
1992	18.0	3488.1	1657.0	299.1	460.1	140.8	20.5	44.2
1993	14.1	3200.6	1529.4	304.0	417.3	133.4	21.5	40.4
1994	9.9	2292.1	1211.6	177.1	367.6	40.6	15.1	24.0
1995	9.0	1737.4	1344.4	211.1	399.7	21.2	13.5	25.4
1996	8.1	1605.0	1021.3	208.4	333.0	5.5	13.0	17.0
1997	8.2	1542.3	1279.1	195.0	483.0	2.7	14.5	24.8
1998	7.8	1519.0	1200.0	215.7	459.7	–	12.6	32.5
1999	8.0	1700.0	1505.0	253.0	575.0	–	17.5	47.1
2000	9.5	1850.0	1600.0	270.0	585.0	–	18.8	50.0

bic metres to less than one-third of the allowable cut in 1998 (Table 1). Since then, the harvests in 1999 and 2000 increased slightly. This trend is predicted to continue until the year 2005, with the total wood harvest reaching 14 million cubic metres annually, which still would constitute only about 62% of its 1990 level (Departament... 2000a: 5).

Currently, the Arkhangelsk oblast is one of the largest suppliers of timber in Russia, with 11% of the total federal timber production and approximately one-third of Russian forest exports to Western markets (Chuiko 2000: 7). The considerable decrease in forest use (from almost 26 million cubic metres in the mid-1980s down to 8–9 million cubic metres in the end of 1990s) did not overthrow the dominant role of the forest industry in the oblast's economy in general.

Fig. 3 shows a more considerable decrease in total harvest during the 1990s, compared to a decline in the manufactured goods production volumes. This phenomenon can be explained partly by the fact that major manufacturers have begun to supplement their raw material supply with imports from neighbouring regions, reaching a level of some 3 million cubic metres in 1999 (Departament 2000c: 5–6). The volume of wood harvested in the oblast is still not able to fully meet the demands of manufacturers especially for pulpwood and sawn timber.

In early 2000, positive performances by most of the oblast's logging companies led to a surplus of pulpwood as its share in total timber production reached 60–80%. Pulp and paper mills had managed to obtain their raw materials for lower

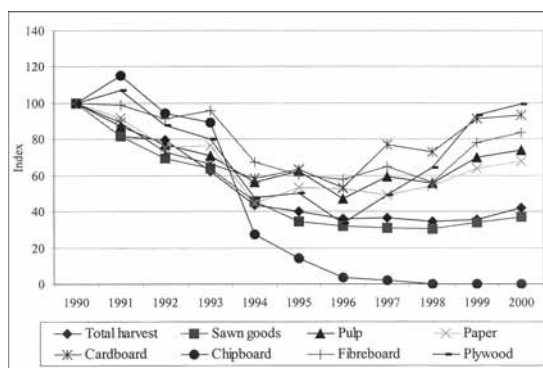


Fig. 3. Forest sector production in the Arkhangelsk oblast in 1990–2000 (in percentage of the production volume in 1990) (cf. Table 1).

prices and were acting as monopolistic buyers, resulting in a considerable fall in prices for the locally produced raw material (both pulpwood and wood chips). The evident overproduction of pulpwood in the oblast affected sawn wood manufacturers unable to meet their requirements for the timber supply. Thus, rising prices for the available raw material lowered the profitability of the export of sawn timber, when the price of sawn timber fell under US\$100 per cubic metre (Grevtsov 2000b: 7).

Despite the falling export prices, the production of sawn goods increased at a slower pace in the year 2000. However, as most of the large and medium-sized sawmills in the region have already attained rather high volumes of production and

small-sized sawmills are orientated mostly towards domestic supply, there will be no potential for substantial increase in production of sawn goods (only to reach the volume of 2.5 million cubic metres) (Departament... 2000c: 5–6). In order to achieve higher prices for the sawn goods, producers must continue improving the quality of the final product and widen the range of goods produced. In 2000, regional pulp and paper mills had managed to produce some 1.6 million tonnes of pulp reaching still only 74% of the 1990 level. Plans exist to increase production to 1.9 million tonnes by the year 2005 (Departament... 2000c: 5–6). The graph also reveals that the oblast's pulp and paper industries have focused mostly on the production of semi-processed commodities such as pulp, only half of which is subsequently refined further into finished commodities (Table 1).

Thus, the outcome of the first ten years of transition can be summarised into three distinct periods (see Figure 3):

1) 1990–1993 – beginning of the transition period, with a disruption of the previous economic system causing a gradual decline in production since state subsidies were no longer available, although some still remained within the system;

2) 1993–1997 – period of initial restructuring of the economic units affected by the transition, resulting in a drastic decline in production due to the limited accessibility of forest resources, since state money was no longer available for purchasing new machinery or for road construction;

3) 1998–present – gradual increase in production (expected to continue) followed the devaluation of the rouble during the financial crisis of 1998, making profitability of forest exports higher. However, the process of restructuring within the sector also increased in the rate of forest use and has supported it to start competing within a market economy.

The export trade

The Arkhangelsk oblast plays an important role in Russia's export of forest commodities, comprising some 22% of total sawn timber and 27% of the total export of pulp and paper products (Chuiko 2000: 7). Several important conclusions can be derived from the latest available statistical data on exports (1993–2000). During the 1990s, the export volumes were relatively stable compared to the industrial output of the sector. Although the export of all forest commodities experienced a

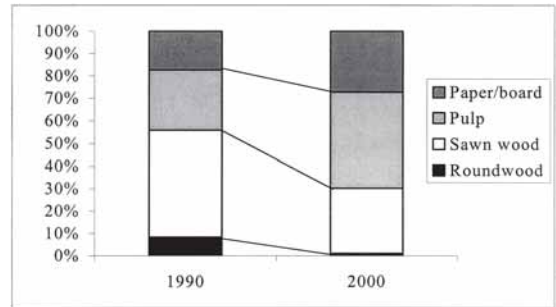


Fig. 4. Changes in the composition of forest exports of the Arkhangelsk oblast in 1990 and 2000 (Departament... 2000a, 2000b, 2000c; Layton & Pashkevich 1999).

decline at the beginning of the transition, the late 1990s, and 1997 in particular, can be regarded as the starting point of recovery for the region's export trade. The volume of forest exports recovered faster than did the production (Nilsson 2000).

Four forest commodities have traditionally accounted for the majority of forest exports from the oblast: pulp, paper, cardboard and sawn goods (Departament... 2000b) (Fig. 4). It is noticeable, however, that the export values of raw materials and semi-refined commodities such as round wood and sawn wood have fallen, whereas the refined products of the mechanical and chemical wood processing industries, pulp, paper and board, have gained importance. The production of high value-added goods has more capital behind it and has been in a stronger position during the process of economic restructuring, while the raw material suppliers have slipped into a weaker and more dependent role (Layton & Pashkevich 1999: 63).

One of the advantages of the transition to market economy is a widening of the possibilities for the forest producers to supply both domestic and international markets. Although Russia's domestic demand decreased over the past decade, it is slowly beginning to recover (Tazhun, 2000). Regional firms operating in the European markets are experiencing heavy pressure to meet new requirements of quality and environmental control brought about by European Union laws. One possible option is a certification of forest goods, which would make it easier to find a niche on the European market and to assure buyers of the environmental safety of the product. Some wood-

processing companies have already initiated this process. Eventually, it would also enhance the competitiveness of Russian forest goods. During the past few years (1998–2001), the overall market behaviour of many Russian exporters has changed in order to facilitate secured delivery and better marketing of the firms' performance.

Firm Restructuring

Several examples of company restructuring have been examined to illustrate the type of changes that occurred during the period of economic transition in the 1990s. In brief, this restructuring has been achieved through the following activities:

- Privatising state-owned companies, concentrating shares among fewer owners and tightening controls on bankrupt enterprises (Grevtsov 2000a);
- Modernising all stages of the production chain (e.g., logging equipment, implementation of non-chlorine bleaching techniques in pulp and paper production) (Carlsson et al. 2000: 8; Severov 2001);
- Horizontal and vertical integration amongst the forest commodity producers, which brought manufacturing businesses closer to each other and to their raw material bases (Pashkevich 2001);
- Fulfilling the customer requirements better, and increasing productivity (Val'kov 2000);
- Activating partnership amongst the biggest producers in the region to govern (administrate) price policy and lobby forest sector interests at federal level (Carlsson et al. 1999; Bulatov 2000);
- Ensuring company credibility by co-operating with the banking system (Kalinin 2000; Parfenova 2000);
- Utilising the capacity of the diverse regional educational systems (secondary and professional) and designing a social policy of the enterprise (summer camps for children, sea resort vacations for employees, bonus system for the most efficient workers) (Drachev 1999; Pashkevich 2001) and different kinds of sponsorship similar to those provided by Swedish forestry firms (Carlsson et al. 2000), including support of local sport teams or cultural events.

The emergence of the new organisational structure within the sector is seen by some as 'the old pattern of centralisation have been re-institutionalised' (Carlsson et al. 1999: 74). The process of

change we have witnessed since the mid 1990s is, however, a different type of structural organisation of the forest sector compared to the old structure. The basis for the formation of larger integrated companies by which loggers are linked to the main processing industries has changed. Today, the process is based on competition, co-ordination and economic co-operation among the partners involved, instead of being imposed by the State. There is certainly a degree of centralisation taking place as well, as the manufacturing capacities located in the biggest cities are often 'in charge', not only of buying the shares of the logging enterprises, but also of facilitating the process of their economic restructuring.

Another feature that many Western researchers considered to be strongly connected with the past is the relationship between the forest enterprises and the local population, which continues to be seen by some as a hindrance to companies' better performance (Tykkyläinen & Jussila 1998; Hamilton 1999; Piipponen 1999; Pallot & Moran 2000). The fact is that most of the harvesting enterprises deliberately choose to take the responsibility for the main social infrastructure – hospitals, schools, clubs, shops, and even power stations – of the forest settlements. In this way, they re-assure employees that their basic needs will be satisfied. Eventually, the firm itself benefits from an increase in productivity, as workers are socially secure and have fewer worries about the future. Some of the 'new' traditions taken into account by most of the forest enterprises were in fact introduced during the Soviet times, such as 'socialist competition', more widely known as piece-work contracts, the only difference being that during Soviet times workers were granted medals rather than money. Today, this has been accepted again and seems to have become a popular measure of encouraging employees to be productive and concerned with the performance of their own firm.

Conclusions

By the beginning of restructuring, the output and consumption of the principal timber products dwindled to between a half and a third. The decrease in production of main forest products in the region followed a pattern similar to the other Russian forest-producing regions, especially in the European part of the country (neighbouring Re-

public of Karelia) (Piipponen 1999), even if the forest product output of the Siberian regions has declined even more drastically (Backman 1999). However, signs of organisational stabilisation have appeared, followed by a higher degree of co-ordination among the actors within the forest sector. The privatisation of forest industries and the limitation of the State's role laid the foundation for the development in the oblast's forest sector. The emerging free market policies helped many regional industrialists to expand even further towards the export markets. It is obvious that forest industrialists have become more active in promoting and lobbying their own interests at various levels of government.

To ensure the future development of all branches of the forest sector, the industrialists must carry out the necessary technical and technological modernisation. In order to improve the competitiveness of their products (such as paper, cardboard, plywood, fibre- and chipboard) the modernisation of the chemical wood-processing industries must continue with the aim to reduce the negative impacts on the environment. An increased level of wood harvest in the districts further inland (the Leshyonskoe, Verkhnyaya Toima, Pinega and Onega districts) will require constructing new forest roads and improving the quality of the existing ones.

The oblast has long served as one of the largest suppliers of forest products to international markets and has most of its trading partners in Europe. It is important to keep a high profile of the oblast's forest products by fulfilling the requirements of sustainable production and customer demands. The sustainable growth based on investment, innovation, technical progress and structural change has already been initiated in the oblast. The 1990s was an extreme decade, judging by the consequences on the overall performance of Russian economy. There have, however, been some considerable achievements made, which are reflected in the development of the Arkhangelsk oblast's forest sector.

ENDNOTES

¹ The Arkhangelsk oblast is located in the north of the European part of the Russian Federation. It covers an area of 587 400 km², comprising 3.4% of Russia's territory, and is situated between the Republic of Karelia to the west and the Komi Republic to the east. The northern boundary consists of the

shores of the White, Barents and Kara Seas (Arctic Ocean). The Vologda and Kirov oblasts are in the south, the Tumen oblast in the northeast. The Arkhangelsk oblast also contains the archipelagos of Franz Josef Land and Novaya Zemlya, and the Nenets Autonomous okrug (NAO). NAO has an area of 176 700 km², which is almost one-third of the oblast (Fig.1). In terms of size, the oblast is the fourth largest in the Russian Federation, after Tyumen oblast (1 435 400 km²) in West Siberia, Magadan oblast (1 199 100 km²) in the Far East and Irkutsk oblast (767 000 km²) in East Siberia.

² 'Wood harvesting' and 'logging activities' are used in the paper as synonyms.

³ Arkhangelsk Industrial centre comprises the three largest cities – Arkhangelsk (administrative centre of the oblast), Novodvinsk and Severodvinsk.

⁴ In Russian, "Programma stroitelstva, remonta i soderzhanija avtomobilnykh dorog."

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