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Impact of changes in forest and economic policy and the business preconditions in Russia and Finland

Välkky, E., Viitanen, J. & Ollonqvist, P. (eds.)

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Abstract
This report investigates what have been the changes in Russian forest and economic policy as well as in business preconditions during past years, how these changes have effected the Russian forest sector and what kinds of effects these changes might have on the Finnish forest sector.

The first chapter of the report takes a look at the different steering measures in Russian forest policy and discusses how they have affected forestry in practice and have the policy objectives been reached. We compare the Finnish and the Russian forest management guidelines and discuss the differences in silvicultural practices of the countries. The second chapter studies the impact of Russian roundwood and sawnwood exports on markets from a Finnish perspective. The third chapter presents the results of a study on the quality of imported sawlogs and grade distributions of sawnwood. The fourth chapter discusses the Russian residential networks, what kind of options Russia offers for Finnish timber construction enterprises and what is the economic and employment impact potential in Finland and Northwest Russia.

Keywords
Russia, forest policy, customs duties, wood quality, import, export, economic impact, international trade, investments, joint interest companies, networks, residential construction, roundwood, sawnwood, stumpage prices

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Foreword

This report gathers the results of studies in the research project *Russia in Flux – Impact of Changes in Forest and Economic Policy and Business Preconditions in Russia and Finland* (2008–2010) and the preliminary results of the project *Russia as an Operational Environment for Forest Sector and as a Market Competitor for Forest Industries* (2011-2013). The objective of the report is to investigate how changes in Russian forest and economic policy as well as in business preconditions might affect the Russian forest sector and the kinds of effects these changes might have on the Finnish forest sector.

The report serves as a final report for the project *Russia in Flux*. The project consortium of this project included three sub-projects that aimed to increase the understanding of the changes taking place in the Russian forest sector. Sub-project I *Implementation and Impact of Russian Forest Policy in Russia and Finland* was led by Prof. Timo Karjalainen, sub-project 2 *Impact of Decreasing Import of Roundwood in the Finnish Roundwood Market and the Role of Russia in the Export Market of Sawnwood* by Jari Viitanen and sub-project 3 *Compensation of Finnish Forest and Wood Working Industry Value Chains That Have Been Based on Imported Roundwood from Russia* by Prof. Pekka Ollonqvist. The studied changes were related in particular to forest policy, the foreign trade in roundwood and sawnwood as well as business opportunities for the forest and woodworking industries. Changes were studied in particular from the viewpoint of the Finnish forest sector.

For many of the topics of this publication a more detailed report has already been published either in Finnish, English or Russian languages. The complete list of produced project publications can be found on www.metla.fi/hanke/3504/julkaisut-en.htm. The results of the project provide information that will help the Finnish forest sector prepare, adapt and react to changes in its operational environment. The project was financed mainly by the Finnish Forest Research Institute and partly by the Puumiesten ammattikasvatussäätiö Foundation and the Niilo Helander Foundation.

Joensuu on 28 February 2011

Timo Karjalainen, Jari Viitanen, Pekka Ollonqvist

1 Russian Forest Policy and its Impact in Russia and Finland

1.1 Russian Policy-Making in Turmoil

The objectives of Russian forest policy have remained similar since the beginning of the 1990s. The intensification of forest use, development of sustainable forestry and increase and diversification of the forest industry production have been the goals of all forest policy programmes since the rebirth of the Russian Federation 20 years ago. A consensus exists also on the most burning problems of Russian forestry. Poor infrastructure and uncompetitive production plants, a lack of greenfield investment in the forest industry, a large share of over-mature and non-productive forests, problems in forest regeneration and the tending of stands and thus increasing the share of commercially non-valuable deciduous forests are the issues mentioned in most development programmes and strategies. Even though the development objectives of the forest policy have remained the same over the years, the policy measures have been far from stable. The forest sector has gone through several administrative and legislative changes, and thus far the turmoil of constant change is showing no signs of slowing down. The objective of this chapter is to describe the current features of Russian forest policy and to depict some of the most significant policy changes over the past 20 years, which have influenced the current situation. Naturally these changes also pave the way for future development. In addition, the impact of Russian policy measures on Finnish forestry is discussed.

During Soviet times, there was no particular need for forest policy. The first priority of the forest sector was to increase forest industry production, and roundwood procurement was considered one of the branches of the forest industry. Thus, roundwood production was controlled by the industrial policy of the country, whereas forestry was seen merely as a means to patch up the damage caused by harvesting. Straight after the collapse of the Soviet Union no reason was seen to change the existing policy, but gradually the sustainability of forestry became more important when Russia joined several international conventions on sustainable forestry and environmental protection during the first half of the 1990s.

The most notable features of Russian forest policy during the past 20 years have been the regular changes both in legislation as well as in the power relations among federal, regional and local authorities (Table 1.1). In 1993, the first Forest Code of the Russian Federation called "The Basic Principles of Forest Legislation" came into force. This legislation moved decision-making authority from the federal to the local level – to municipal administrations. This had several negative consequences, as the local authorities were inexperienced and unprofessional in forest management and the close connections of the local administrations with businesses opened a new window for corruption and illegalities related to forest utilisation. In 1997, a new Forest Code was adopted transferring the power from local administrations partly back to the Federation, but handing significant powers also to regional administrations. The regions had a right to prepare and adopt regional legislative documents; they were also given the right to grant forest use rights and set related tax tariffs and rental payments. Shifting the decision-making from local to regional authorities helped restore professional forest management, but introduced new concerns because of tension between the federal and regional authorities. This conflict of interests resulted in inefficient forest management: expenses caused by the management, protection and conservation of forests, covered mainly by the federal budget, exceeded twice the revenues from forest use. In 2005, the main executive powers related to forest use were shifted back to the federal level. This was part of a general process of centralising government administration. At that time, the preparation of yet another new Forest Code was underway, and centralising power to Moscow aimed at creating conditions for a more wide delegation on powers to the regions a few years later.

Table 1.1 Forest power relations and changes in legislation and organisational structure at the federal level during 1991–2010.

Year	LEGISLATIVE CHANGES	MAIN EXECUTIVE POWER AT THE …	ORGANISATIONAL CHANGES IN THE FEDERAL FOREST ADMINISTRATION
1991			Collapse of the Soviet Union
1992		Federal level	State Forest Committee of the USSR (*Goskomles SSSR*) is transferred under the subordination of the Ministry of Forestry The Ministry of Forestry is renamed the Forest Committee and transferred under the subordination of the Ministry of Natural Resources and Environmental Protection The Forest Committee is reformed as the independent Federal Forest Agency of the Russian Federation (*Rosleskhoz*)
1993	Basic Principles of Forest Legislation (*Osnovy lesnogo zakonodatelstva)* 6 March 1993, No. 4613-1	Local administrations	
…			
1997	Forest Code (*Lesnoy kodeks*) 29 Jan 1997, No. 22-FZ	Federation and the regions	
…			
2000			Abolishment of *Rosleskhoz*, transfer of its duties to the Ministry of Natural Resources as a department of the ministry
…			
2004			Re-establishment of *Rosleskhoz* under the subordination of the Ministry of Natural Resources as a federal agency
2005	Federal law on administrative changes 22 Aug 2004, No. 122-FZ	Federation	
…			
2007	Forest Code (*Lesnoy kodeks*) 4 Dec 2006, No. 200-FZ	Regions	
2008			*Rosleskhoz* transferred under the subordination of the Ministry of Agriculture
…			
2010			Transfer of *Rosleskhoz* under the direct subordination of the federal government Abolishment of the Forestry Department of the Ministry of Agriculture

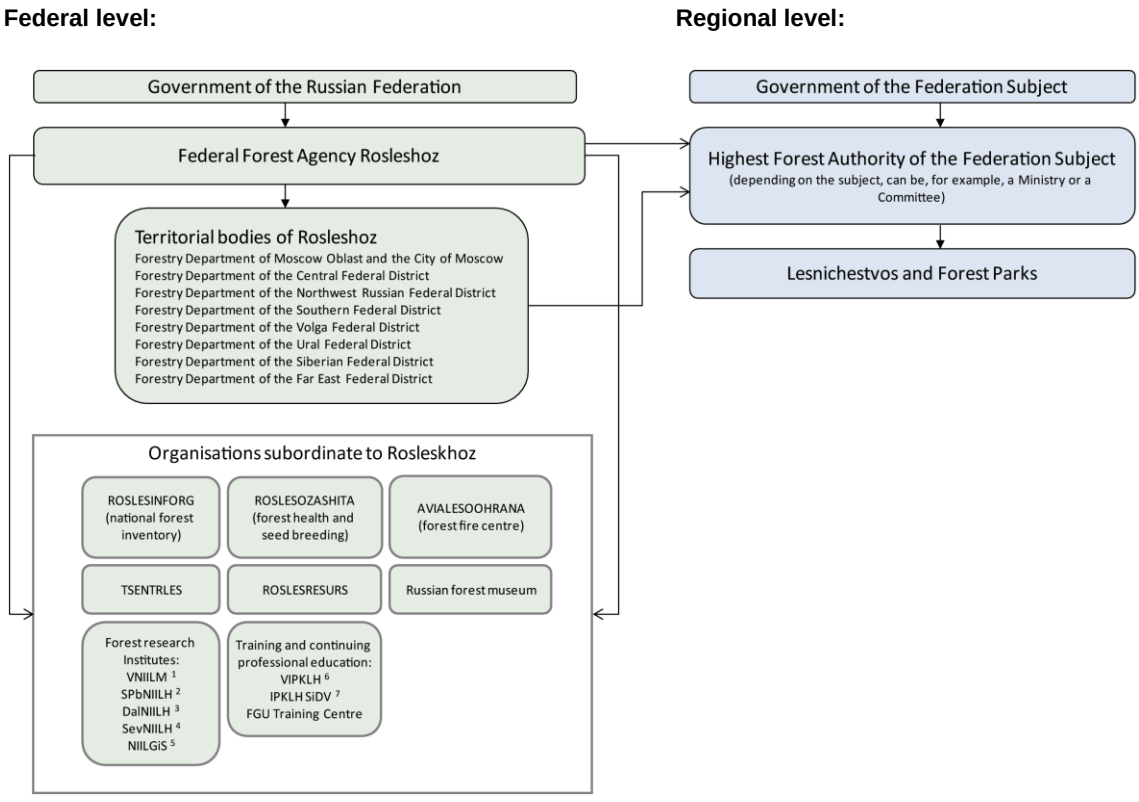
The constant organisational changes are not, however, a quirk that is typical only for today's Russia. During Soviet times, the position and structure of the highest forest administration also changed in practice every 3–4 years and the administrative personnel was reorganised 40 times i.e. every second year. These constant changes tell the struggle of the decision-makers to make long-term strategies and to stick to them. According to the head of the Greenpeace Russia forest programme Alexey Yaroshenko, one of the most significant failures in Russian forest policy-making during the past 10 years has been the abolishment of independent government agencies on forestry and environmental protection in 2000. The duties of the Federal Forest Agency and governmental Committee of Environmental Protection were handed to the Ministry of Natural Resources, which resulted in a long unstable stage before the new structures began to work properly. This instability also affected the lower levels of forest administration. Over 200,000 workers in local forest districts (then *leskhozes*) and forest ranges (then *lesnichestvos*) were left in uncertainty about the future of their jobs. This resulted in the loss of several thousands of the most capable workers as the respect towards forestry professions gradually declined. According to Yaroshenko, the forest sector has not recovered from this brain and experience drain. Even though the Federal Forest Agency was restored under the auspices of the Ministry of Natural Resources in 2004, because of yet new changes in the legislation, particularly the control over forest protection was significantly weakened.

At the moment, the circle is closing concerning the position of the Federal Forest Agency. In August 2010, the independent position of the Agency was restored as it was transferred back to the direct subordination of the Russian government (Figure 1.1). Before this, the Agency worked under the Ministry of Agriculture and competed with the own Forest Department of the Ministry. One important reason behind the reinstatement of powers to the independent Forest Agency was the catastrophic forest fire situation in summer 2010 and the appeared problems in organising fire control. The heavy public criticism of the fire control required drastic measures from the decision-makers, and their answer was the complete reorganisation of forest administration in autumn 2010. The number of employees at the Federal Forest Agency was almost tripled to 420 people and the personnel of the regional agencies of *Rosleskhoz* were more than doubled to 1,131 people. The number of deputy heads of the Agency was increased to six and the number of department heads to 12. The funds for increasing the human resources of *Rosleskhoz* were received from the concurrent cutbacks of personnel from the central apparatus of the Ministry of Agriculture and the central and regional administrations of the Federal Service for Veterinary and Phytosanitary Surveillance (*Rosselkhoznadzor*). The transfer of *Rosleskhoz* directly under the government and substantial growth in the number of personnel is expected to make the position of the Federal Forest Agency stronger in terms of decision-making. The simultaneous abolishment of the Forest Department within the Ministry of Agriculture will also help concentrate all forestry questions in one place without having them compete for power.

The most recent legislative reform in the Russian forest sector started in 2007 when the new Forest Code came into force. The adoption of the new Forest Code was preceded by a long and extremely critical drafting process. The draft versions of the Code received heavy criticism from Federation subjects, scientists, forestry professionals, NGOs and society in general. The most severe criticism was directed towards plans to privatise forest property, which was one of the main targets in the first draft of the Code prepared by the Ministry of Economic Development and Trade. The whole law-drafting process was seen as a secretive operation providing no possibilities for forestry specialists to give feedback to law-makers. Despite this criticism, the draft was brought to the State Duma in 2005, but after a cascade of further criticism the ratification process was suspended and a working group was formed to tackle the most

problematic questions. According to expert estimates, this process was, however, very unorganised and chaotic and reflected the power relations among the different interest groups rather than clear views on the future development of the Russian forest sector. Finally, after radical alterations, the new Code passed the hearings of the State Duma and the Federal Council and came into force on 1 January 2007.

The implementation of the new Forest Code has been challenging. A significant number of forestry guidelines had to be revised on a tight schedule. This led to discrepancies and contradictions in the guidelines, which made it partly impossible to carry out work according to all regulations. This aroused general dissatisfaction towards the new Forest Code among stakeholders, and according to NGO estimates the obscure regulations and huge bureaucracy involved reduced the general respect and obedience to the law. Owing to these discrepancies, the Forest Code has been under constant change: during 2007–2010, 11 amendments to the Code and 11 amendments to the implementing provisions of the Code were made. Some of the amendments were simply rephrasings of single paragraphs of the Code to make them clearer, but other amendments made comprehensive changes to the whole Forest Code. The latest revision to the Forest Code was made on 29 December 2010 (N442-FZ). This revision made changes in 92 paragraphs of the Code, which constitutes 22% of all the paragraphs. No end to the changes seems to be in sight even in 2011, as several federal laws, government and *Rosleskhoz* decrees are currently in preparation.



[1] Russian Research institute for Silviculture and Mechanization of Forestry
[2] Saint-Petersburg Forestry Research Institute
[3] Far East Forestry Research Institute
[4] Northern Research Institute of Forestry
[5] Research Institute for Forest Genetics and Selection
[6] Russian Institute of Continuous Education in Forestry
[7] Siberian and Far Eastern Institute of Continuous Education in Forestry

Figure 1.1 Organisational structure of the Russian forest administration at a federal and regional level.

In addition to the Forest Code and related rules and guidelines, the basic means for regulating Russian forest policy have been different development programmes and strategies as well as legislation, which regulates the forest sector indirectly, for example, through customs duties. At a regional level, the tools for Federation subjects to regulate forestry in their particular regions are the Regional Forest Plans and other forest planning documents, which determine the goals and operations on the region in question. One of the recent means of promoting the goals of Russian forest policy is the Act on Priority Investment Projects (government Decree 30 June 2007 No. 419), which aims at the establishment of large wood industry holdings by providing investing companies with privileges in raw material acquisition and mandatory payments. The next chapters take a closer look at these different steering measures in Russian forest policy and discuss how they have affected forestry in practice and have the policy objectives been reached. We also compare the Finnish and the Russian forest management guidelines and discuss the differences in silvicultural practices of the countries.

1.2 Legislation and Other Guiding Documents and Their Impact on the Forest Sector

1.2.1 Forest Code

The new Forest Code introduced several significant changes compared with the old legislation. The decision-making power was delegated from the federal level to regions i.e. to the subjects of the Federation. The new legislation broadened the rights and obligations of the forest leaseholders and at the same time abolished the right of local authorities to commercially harvest timber. The old system, where the same organisation was able to both conduct forestry operations and to control them, was demolished, and the forest use management and control duties were divided between different authorities.

The earlier classification of forests into three management groups was changed, and currently forests are classified into protection forests (24% of the forest area), production forests (53%) and reserve forests (23%). Concerning the economic use of forests, the most significant change in the new legislation was the aim to make long-term leases the main form of forest use instead of short-term cutting licenses. The most essential principles of the Forest Code regarding the economic use of forests and forest planning are presented in Table 1.2.

Owing to the global economic recession in 2008–2009, it is hard to estimate the effect of the new Forest Code on the forest sector. The financial crisis in Russia started during the first half of 2008, which was still very much a transition period to the new legislative system. However, some comparisons can be attempted in order to study the impact of the new legislation.

The new Forest Code gave the regions fairly full powers in administrative forest management. The regions are currently responsible for forest protection and control, forest planning and the organisation of forest management and use. However, when it comes to the legislation and financing of forestry, the Federation still keeps the regions on a tight rein: most of the normative documents are approved at a federal level and almost all forestry income is directed to the federal budget, from where money is channelled back into the regions in the form of subsidies. This creates an imbalance between federal and regional authorities. The regions are saddled with most of the responsibilities on practical forestry, but have very little power to regulate the way they organise their work. By contrast, government authorities have no responsibility for the concrete work in the forests, yet they are able to determine “the rules of the game” and also allocate the financing for the work.

Table 1.2 The most essential principles of the Forest Code (2007) regarding the economic use of forests and forest planning.

Forest administration	Decision-making power delegated from the Federation to the regions The basic administrative unit of forestry is a *lesnichestvo* (endowed only with administrative functions) Former *leskhozes* turned into commercial entities (no budget funding, income from service orders)
Classification of forests	Protection forests (protection areas, shelter forests, other valuable forest areas) Production forests (forests for commercial use) Reserve forests (not intended for timber harvesting within the nearest 20 years)
Use of forests	Based on forest leases (10–49 years) or purchase/sale contracts (max. one year) Use rights given through auctions
Forest planning	New system of forest planning documents: • Regional Forest Plan • Silvicultural Regulation • Forest Management Plan • Forest Declaration National Forest Inventory introduced Possibility for private companies to provide forest planning services
Silviculture and fire protection	Responsibility of a leaseholder

The responsibilities of forest regeneration and forest and fire protection on leased forest areas were handed in the new Forest Code from local forest management units, former *leskhozes*, to forest leaseholders. This has raised a lot of concern among both the forest leaseholders as well as the NGOs. The general concern was that making the leaseholders responsible for the work would have a negative effect on the quality of the operations performed and, particularly regarding fire protection, the resources of a single leaseholder were doubted.

When taking a look at the forest regeneration statistics, no major changes can be observed at least in the volumes of regenerated forest area after the adoption of the new Forest Code (Figure 1.2). The regenerated forest area has remained fairly stable during 2003–2010 and even a slight increase in the regenerated area can be observed in 2007 – along with a peak also in harvesting volumes. Artificial regeneration has constituted approximately one-quarter of the total regenerated area and the rest has been regenerated through so-called assisted natural regeneration, which can be done by retaining undergrowth or second tree storey in clear cutting or by utilising seed trees or natural seeding from a neighbouring forest stand. It is still too early to evaluate whether there is a difference in the quality and success of the regeneration performed before and after the adoption of the new Forest Code in 2007.

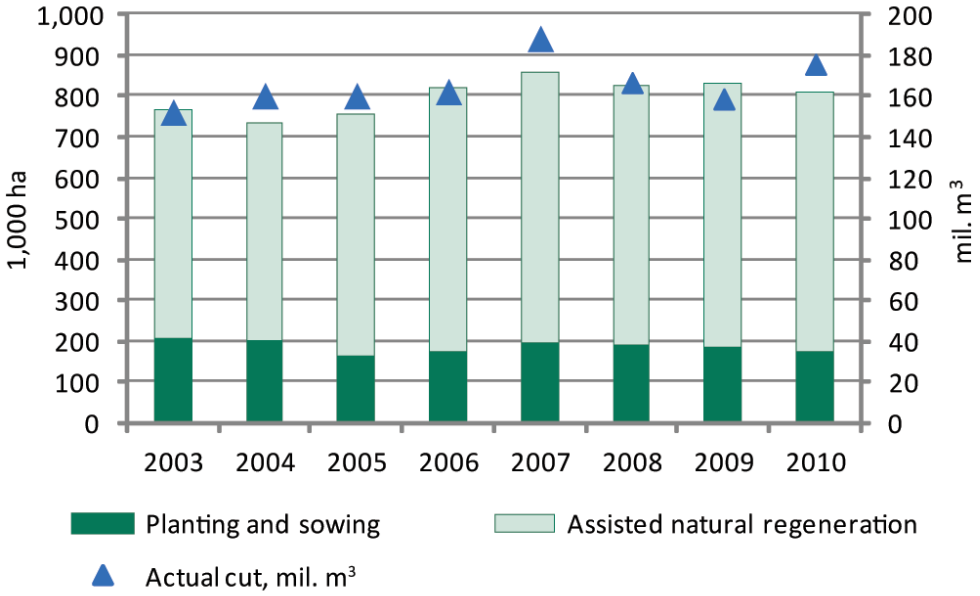


Figure 1.2 Forest regeneration area (left) and harvesting volumes (right) in Russia in 2003–2010 (including forests administered by *Rosleskhoz*). Source: *Rosleskhoz*

The transfer of the responsibility for fire protection to the leaseholder has, however, led to serious consequences. A vivid example of this was the forest fires in summer 2010. The Moscow, Nizhny Novgorod and Voronezh regions particularly suffered from heavy fires and smoke. For instance, in Moscow the fires were estimated to have doubled the death rate of the city from 350 to 700 people in August 2010. Depending on the weather conditions, the number of fires and burned forest areas has fluctuated over the years (Figure 1.3), but the years 2008–2010 heralded three bad years in a row. During the 2000s, there were four years when the burned forest area reached 2 million ha or more, and three of these years were 2008, 2009 and 2010. The number of forest fires in 2010 was 32,000 and the burned forest area 2.1 million ha. One must note that the numbers presented above are official statistics for forests administered by *Rosleskhoz* and their accuracy has been criticized. In 2010, two independent research organisations of the Russian Academy of Sciences, the V.N. Sukachev Institute of Forest and the Space Research Institute, estimated the total area of forest fires in Russia to be almost 6 million hectares.

Even though the weather conditions in 2010 were unusually warm and dry in Russia, that is not the only explanation for the hazardous fire situation. In Belarus, for example, the weather conditions were similar to Russia and there the fire situation was under control. Some of the reasons for the fires are of a cultural nature: even though people suffer the consequences of forest fires, it does not seem to stop them making campfires or throwing cigarette ends into the forests. However, serious deficiencies were identified in the legislation and organisation of forest fire protection, and measures were taken by the Russian government to ensure that the same will not happen in 2011. The Federal Forest Agency was transferred to the direct subordination of the government and significant changes were made to the Forest Code concerning fire safety regulations. The amount of state subsidies for fire protection was increased by €37.5 million. In addition, €124 million of budget money has been reserved for Federation subjects to buy fire fighting equipment, which should, along with the regional financing, amount to at least €149 million.

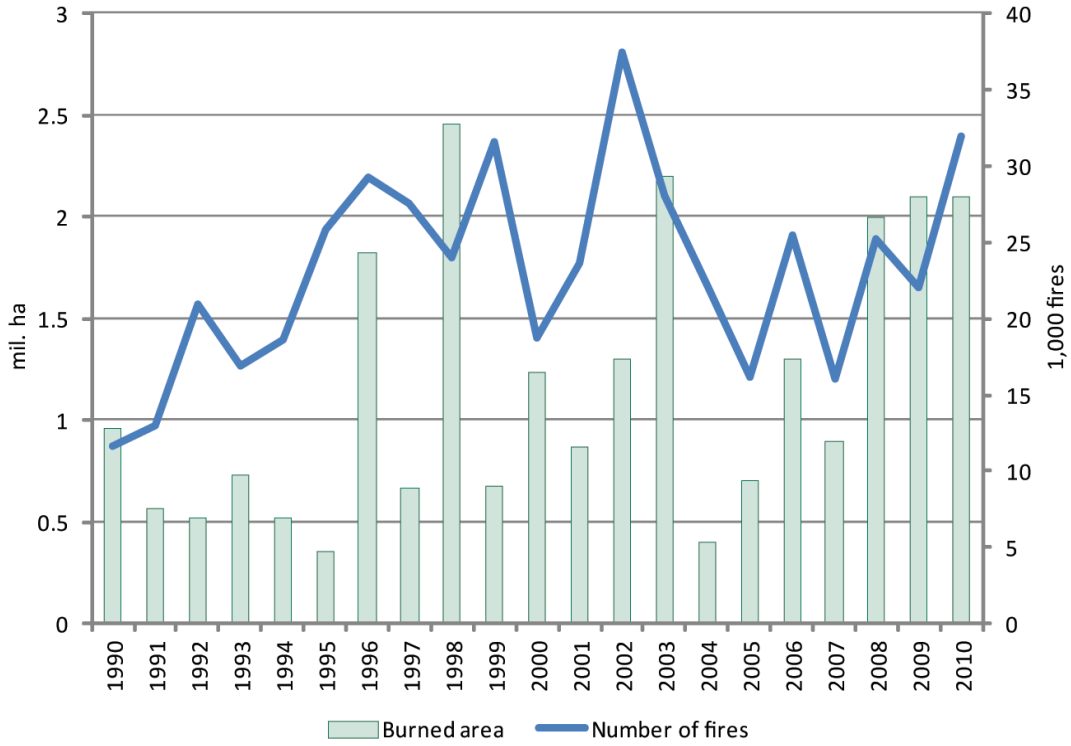


Figure 1.3 The area of burned forests (left) and number of forest fires (right) in forests governed by *Rosleskhoz* in 1990–2010. Source: *Rosleskhoz*

Even though the leaseholders have been critical of the new responsibilities in forest management, according to Torniainen (2009) the new system is, however, better than the old one. Torniainen studied the attitudes of forest leaseholders towards the new Forest Code six months after the adoption of the new Code. Leaseholders expressed criticism, particularly towards the transfer of responsibilities in silviculture and forest fire protection to leaseholders without governmental subvention. Almost all respondents, however, preferred long-term leases with silvicultural responsibilities to short-term cutting licenses without responsibility for silviculture. The majority of the respondents shared the opinion that the new Forest Code will not make it easier to obtain forest resources.

The adoption of the new Forest Code does not seem to have had a major effect on the area of leased forests. The area leased for harvesting has been growing steadily during the past few years. In 2006, the total forest area leased for harvesting in Russia was 114 million ha with an annual allowable removal of timber of 140 million m^3. In 2007, the leased area rose to 118 million ha with an annual allowable cut of 149 million m^3. In 2009, the area was 143 million ha with an annual allowable cut of 205 million m^3. The actual cut in leased forests has been fairly stable during 2006–2009 varying between 87–94 million m^3 annually.

The total harvesting volumes have also remained fairly stable. Figure 1.2 presents the harvesting volumes in Russia during 2003–2010. The most active year in harvesting was 2007 when the actual cut was 188 million m^3. After this, the harvested volumes came down approximately 15% because of the general economic crisis, but have increased again in 2010.

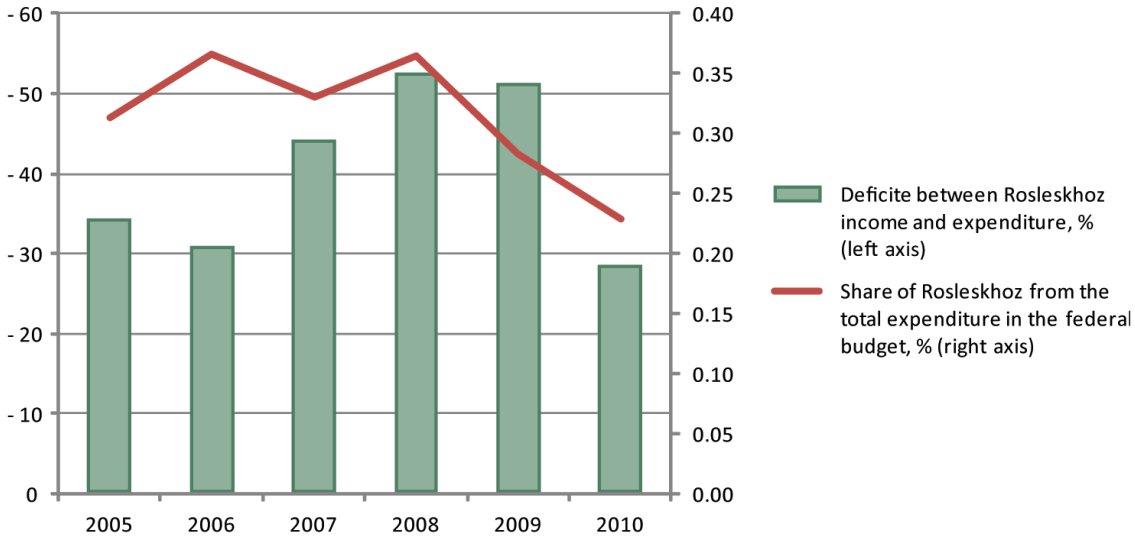


Figure 1.4 Rosleskhoz financing in 2005–2010. Source: *Federal Treasury*

State financing for forestry has been insufficient during 2005–2010 (Figure 1.4). When analysing the realisation of the annual federal budgets, it can be seen that the negative gap between Rosleskhoz income and expenditure has been on the increase after the adoption of the new forest code. An exception was year 2010 when an attempt was made to cut down forest sector's costs in the federal budget. The share of Rosleskhoz expenditures from the total expenditure in the federal budget has reduced from 0.37% in 2006 to 0.23% in 2010. The cut-backs did, however, have their side effects and the problems with forest fires in summer 2010 resulted in significant increases in the budget in 2011.

The constant legislative and administrative changes in the forest sector have impacted employment in forestry. According to the Federal State Statistics Service (*Rosstat*), the average total number of employees in forestry (incl. harvesting) and services related to it in Russia was almost 444,000 people in 2005 (Figure 1.5). This included all sectors of the economy: federal, regional, municipal, private, non-governmental and so on. In 2010, this number had dropped to a little over 248,000 people i.e. the decline had been 44%. The federal level had experienced the sharpest decrease in the number of employees with a 55% decline. By contrast, the number of workers at a regional level had more than tripled from 19,700 to 81,300 employees. This drastic change between federal and regional employees is related to the transfer of the former regional structures of the federal-level forest administration to regional possession. All federal-level jobs do not seem to have, however, transferred to the regional level as the cutback in the number of employees at a federal level was 122,500 people, whereas the increase in personnel at a regional level was only 61,600 people between 2005 and 2010. Compared with other employers, the private sector seems to have been more stable in employment in Russia: the total decrease in 2005–2010 was 31%.

The impact of the new Forest Code is clear when examining the division between the number of federal and regional employees. However, when it comes to the overall decrease of employees, the trend has been a declining one since the beginning of the 2000s. The pace has been accelerating towards the end of the decade, but this may also be related to the general economic recession.

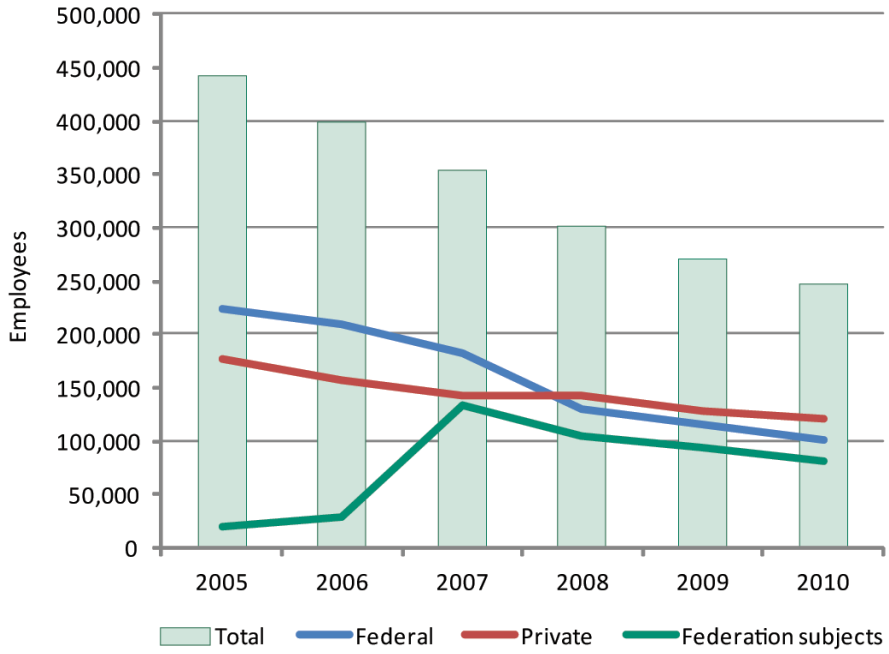


Figure 1.5 Number of employees in forestry (incl. harvesting) and services related to it in Russia in 2005–2010. Source: *Rosstat*

1.2.2 Regional Forest Plans and Other Forest Planning Documents

Prior to 2007 both forest inventory and forest planning were conducted by the Federal Forest Inventory and Planning Enterprises (*Lesproekt*), which worked under the Federal Forest Agency. These forest planning organisations were responsible for compiling a 10–20-year plan (*lesoustroitelnyi proekt*) for each administrative unit in forestry such as *leskhozes*, national parks and so on. The then elementary organisational units in the Russian forest administration – *leskhozes* – executed the compiled plans and updated the forest planning data whenever silvicultural measures were undertaken, fellings had taken place or natural disasters such as forest fires occurred. The work was systematic and the plans were updated on a regular basis.

The system was criticised, especially regarding the method of implementation as both the forest inventory and forest planning were the responsibility of state-owned enterprises, whereas no organisation oversaw the quality of their work. It was envisioned that, as the forest leasing periods became longer, forest users would need more accurate and customer-orientated forest planning, thereby creating a market for new forest planning enterprises.

The new Forest Code renewed profoundly the system of forest management planning in Russia. The main task of the Federal Forest Inventory and Planning Enterprises is no longer to conduct forest management planning as a governmental service, but to develop a new system of national forest inventory. In addition, they provide forest planning services for forest users on a commercial basis.

National forest inventory is conducted by the Center of National Forest Inventory and Monitoring (*Roslesinforg*), which has 13 units across the country (former federal forest inventory and planning enterprises). The national forest inventory system is new, and it is

expected to give its first completed results by 2020. It will utilise remote sensing data as well as field measurements from approximately 100,000 permanent sample plots to be established.

According to the Forest Code, the subjects of the Federation bear the responsibility for strategic forest planning in their own regions. They carry out regional forest policy, are in charge of granting permits and licenses to forest users, take care of forest administration and control and organise forest and fire protection as well as regeneration in areas that are not under forest lease. At a forest compartment level, the responsibility for forest planning is on the forest user. The forest user has to make a plan for his forest area covering both wood procurement and procedures for forest protection, regeneration, biodiversity and water protection. The new Forest Code introduced a four-level planning system with a number of new planning documents (Figure 1.6):

- ***The Forest Plan of the Subject of the Russian Federation*** (*lesnoj plan subjekta*) is the core document describing the objectives of a particular region (*oblast*, republic etc.) for forest use and protection within its own territory. The plan describes the forest resources, their utilisation and their needs for protection and regeneration as well as analyses the economic effects of the proposed operations. The plan is made for 10 years, and it is based on existing inventory data as well as on Silvicultural Regulations, which are prepared for the current elementary organisational units of the Russian forest administration – *lesnichestvo*. The compiler of the plan is chosen through a competitive bidding process organised by the highest forest authority in each region, and the plan is undersigned by the head of the Federation subject.
- ***Silvicultural Regulation*** (*lesohozjaistvennyj reglament*) is a plan compiled for each administrative unit in forestry (i.e. *lesnichestvo* or forest park). It is valid up to 10 years depending on the intensity of forestry and trends in regional economic development. The Silvicultural Regulation determines the use, protection and regeneration of a particular administrative unit. The compiler of the plan is chosen through a competitive bidding process organised by the highest forest authority in each Federation subject.
- ***The Forest Management Plan*** (*proekt osvoeniya lesov*) is the basic operational plan determining the practical use of forests. It is made by the forest user, or he or she can order the service from a forest planning company. The development plan is subjected to a governmental examination organised by the highest forest authority in each Federation subject. An approved Forest Management Plan is a prerequisite for all forestry operations in the area in question. The plan is based on existing inventory data and in addition to a forest use plan it also consists of a plan for forest protection and regeneration as well as water body, flora and fauna protection. The plan is valid for up to 10 years.
- ***The Forest Declaration*** (*lesnaya deklaratsiya*) is a document with which the forest user informs the authorities about the planned forestry operations on his or her forest area. The declaration should be handed to officials in due time before the beginning of operations and should comply with the Forest Management Plan of the area. The declaration lists operations at the kvartal[1], stand and compartment levels according to tree species, area and harvesting volume. The declaration is approved by the local *lesnichestvo*.

[1] A "kvartal" is the basic spatial unit in forest management planning in the Russian Federation. Kvartals form a grid of rectangle shaped management compartments in the forest and their typical size ranges between 200 and 400 ha.

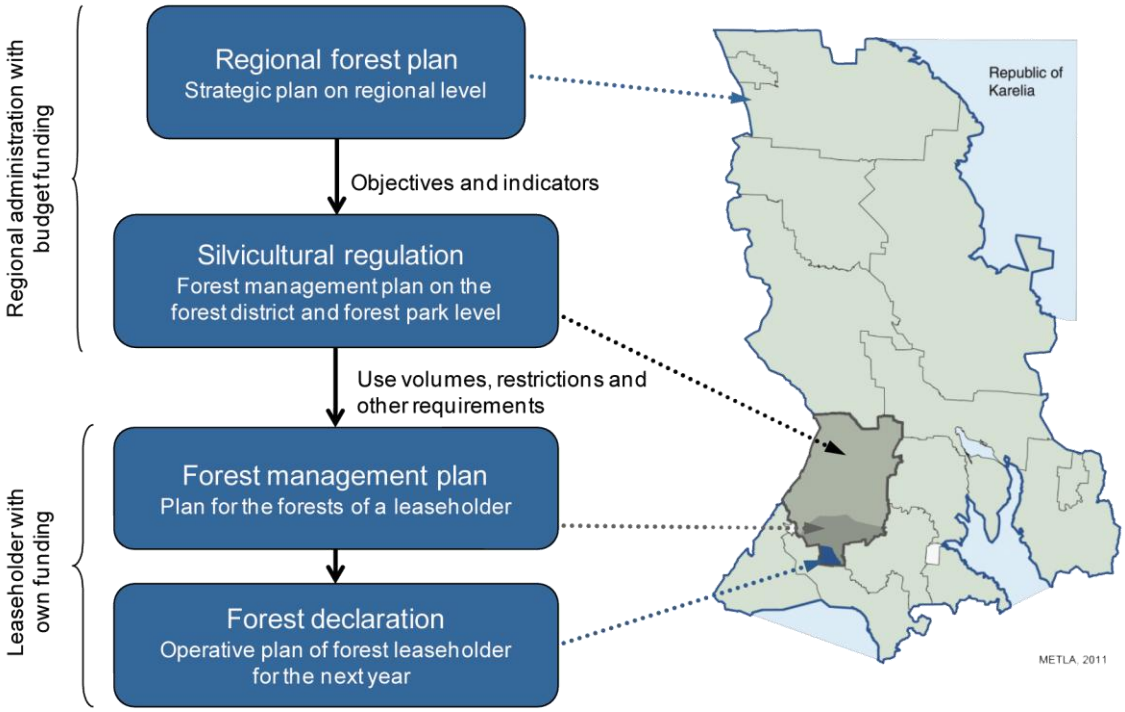


Figure 1.6 The regional forest planning system in Russia – an example from the Republic of Karelia.

In principle, the significance of the above described documents is substantial. They form the basis for all operations in the forests, and, for example, without an approved Forest Declaration, the use of forests is considered illegal. However, the many discrepancies and difficulties in adopting these documents have seriously undermined their status.

The Regional Forest Plan is the foundation for the rest of the planning documents, and it has a legislative status as it is signed by the head of each Federation subject. For the first time in 2007 the regions were introduced to a plan, which gives them an opportunity to consider the forests of the region as a strategic resource. As the plans are made by the regions, each region will be able to adjust the plan to its local conditions and emphasise the factors that are important to them. For example, the Forest Plan for the Arkhangelsk region stresses investment policy and the efficiency of the forest industry, whereas in the Novgorod region the plan considers ways to increase harvesting – both regions starting from their own strengths and weaknesses. However, despite the supposedly high status of the Regional Forest Plans, there is no actual control over the fulfilment of their objectives. Federal bodies control the use of granted subsidies, but the implementation of the plan is the responsibility of the regions.

During the preparation process of the Regional Forest Plans, it seemed that the regions did not adopt the regional plans as they ought to have done, but were merely fulfilling orders "from above" when preparing the documents. This was evident during a meeting with *Rosleskhoz* in autumn 2008 as the leaders of *Rosleskhoz* admonished the regions for not taking the plan preparation seriously enough. The leaders of the Federal Forest Agency tried to convince the regional authorities that they were preparing a strategy for the development of their forest sectors primarily for themselves and not for officials in Moscow.

Thus far, because of the economic crisis in 2008–2009, it is still difficult to assess the actual success of these plans as most financial indicators have taken a downturn and many investment projects have been postponed. No comprehensive studies have yet been made about the plans and the question of whether they will become actual strategic documents or remain merely as yet another development plan left to gather dust on the bookshelves of bureaucrats remains unanswered. However, the renewal of the forest planning system has raised a lot of criticism, which might also have an effect on the activeness of the regions to execute the plans to their full potential.

The main criticism of the new forest planning system has been associated with the quality of the newly prepared forest planning documents as well as with the abolishment of the former forest planning system. Law-makers wanted the new planning documents to be prepared consecutively from the top down, starting from the Regional Forest Plan, which forms the strategic basis for developing the forestry of a particular region. This was not, however, the case when the preparation of the new plans started after the adoption of the new Forest Code. Both Regional Forest Plans and Silvicultural Regulations were prepared simultaneously, and most forest users had to start preparing their Forest Management Plans before the regional plans and silvicultural regulations had been approved. Yet again, this led to several discrepancies between the different plans. The tight schedule also caused unnecessary mistakes. The Regional Forest Plans and Silvicultural Regulations were prepared in a rush at the end of 2008, and they were based on guidelines that have since been changed and improved. Owing to the tight schedule, the plans were in many cases prepared by organisations and people that did not have the required qualifications or experience for the work.

When it comes to planning harvesting operations, some experts have criticised the planning system for being too rigid for practical purposes. The Forest Management Plan requires forestry operations be planned for the next 10 years in too much detail. For example, in addition to the identification of the location of new forest roads, the location of skidding roads should also be identified in the plan. This is highly complex because of the dynamic nature of practical forestry, particularly to a new forest leaseholder that has just received the forest area into his or her possession. To make changes in the approved Forest Management Plan is bureaucratic, as the revised plan has to go again through the governmental examination organised by the highest forest authority of the Federation subject. There is also no established interpretation on the time span for submitting the Forest Declaration. Some officials interpret that it is required to submit the Forest Declaration for the whole year at once, whereas, for instance, in the Republic of Karelia the authorities have adopted the practice that forest leaseholders can submit the Declaration 10 days before the start of harvesting on a certain site. The interpretation that the Declaration should be made for the whole year at once is too rigid for practical forestry because it is difficult to plant the practical work in the forest more than 12 months ahead.

As a solution to the current problems of forest management planning in Russia, a quick change to the legislation has been required and the responsibility for compartment-level forest planning should be returned to the state. In the latest revision to the Forest Code in December 2010, forest planning was again included on the list of activities funded by the government, but in practice this will come into force only in 2012, as the budget for 2011 has already been confirmed. However, contrary to the wishes of many forest planning professionals, the basic unit of forest planning will remain a lease area. Forest planning experts were hoping for a return of the old system where the Federal Forest Inventory and Planning Enterprises conducted forest management planning as a governmental, budget-funded service, and the basic unit of forest planning was a *lesnichestvo* instead.

Regional Forest Planning in the Making – The Case of the Leningrad Region

The preparation of the Regional Forest Plans was started after the government adopted the Act on Regional Forest Plans (24 April 2007 N246). Strict timelines were given for the regions to have the Forest Plans ready by the beginning of 2009. The actual preparation of the plans was given to subcontractors who were selected by regional authorities after a competitive bidding process. The selection of the drafters for the plans did not go without problems: in some cases, the transparency of the selection process was questionable and the selected organisations were not always qualified or experienced enough to carry out the work. This resulted in crude mistakes in some of the documents.

The tight schedule also placed even the most experienced organisations in a challenging situation: there was no earlier experience or references regarding the preparation of the new documents and, therefore, the work had to be started from scratch. In addition, many of the most experienced organisations were preparing Forest Plans concurrently for several regions. For example, the St. Petersburg Forest Research Institute compiled plans for the Tver, Novgorod and Arkhangelsk regions as well as participated in the plan preparation for the Republic of Karelia.

The preparation of the Leningrad region Forest Plan was far from a success story, but it is presented here as an example because it was studied at the St. Petersburg Forest Technical Academy. In this study, local stakeholders (forestry professionals, company representatives, forest planning professionals, teachers and students of forestry universities) were interviewed regarding their opinions about the forest plan of the region.

In addition to serious deficiencies in content, problems in preparing the Leningrad region Forest Plan were associated with the drafters' disregard of the timelines given for public hearings and the absence of some of the annexes from the presented draft. According to the law, citizens should have been given 30 days to familiarise themselves with the plan after its publication on the official website of the region. This rule was broken in the Leningrad case. Also, the published plan lacked maps of planned exploitable and protected forests and only partly presented the information at a *lesnichestvo* level. Greenpeace took the case to the local prosecutor, claiming that the administration of the Leningrad region was deliberately trying to hide the plans to transfer part of the so-called greenbelt forests into commercial use. These greenbelt forests are forests with use restrictions surrounding cities and other population centres, and have both important recreational and sanitary values. The Forest Plan of the Leningrad region suggested reducing the area of these forests into 3% from the original area (732,423 ha). This reduction would have particularly concerned the forests of the Karelian Isthmus. The prosecutor took the side of the NGO and recognised the deficiencies in the plan-making process. However, this had no effect on the regional decision-makers until the prosecutor filed the case to the Leningrad Regional Court in December 2009. The court decision came in March 2010, stating that the adoption of the Leningrad region Forest Plan would be revoked.

Taking into consideration the turmoil around the Leningrad region Forest Plan in spring 2010, it is no wonder that the results of the study regarding the stakeholders' opinions about the Forest Plan were not flattering. Interestingly enough, the analysis brought up the disinterest of many of the stakeholders towards the ongoing reforms. Some respondents had not even heard about the new Regional Forest Plans, and only 25% of those who did know the plan stated that they were familiar with its actual content. From those who had acquainted themselves with the plan, 75% stated that the preparation of the plan had been unsatisfactory. Respondents were unanimously of the opinion that the time for the plan preparation had been insufficient.

The confidence of the respondents regarding the influence of the new Forest Plan on practical forestry was also underwhelming. Altogether, 81% of the respondents believed that the plan would have no effect on the development of forest infrastructure, and 56% estimated that the plan would have no practical effect on the amount of silvicultural or regeneration work carried out. Most respondents (63%) did not anticipate any change in the recreational use of forests. However, 38% saw that there might be a positive effect because of the increase in the recreational forests of the city of St. Petersburg, whereas a few respondents stated that the effect would be negative given the reduction in greenbelt forests.

According to the study, the overall opinion of the majority of respondents was that the Forest Plan of the Leningrad region was not a significant document from the point of view of a practical forester and that it would require substantial work before it was useful and non-contradicting to the legislation. Some of the answers reflected the opinion that the drafters of the Forest Plan had merely fulfilled the wishes coming from "above" – i.e. from large forest companies – aiming at maximum results with minimal investment.

1.2.3 Development Programmes and Strategies

One of the problems of Russian forest policy has been the lack of coordination between the development of forest and forest industry policy. The development of forest policy has been the responsibility of the Federal Forest Agency (formerly under the Ministry of Agriculture), whereas the Ministry of Industry and Trade (formerly the Ministry of Energy and Industry) has been in charge of the development of the forest industry. Both sectors have had their own long-term strategy plans: the Development Concept of Forestry for 2003–2010 and the Main Directions of Forest Industry Development for 2002–2015. The first attempt to combine these two development plans was made only in 2008 when the Ministry of Agriculture and the Ministry of Industry and Trade ratified a joint Forest Sector Development Strategy up to 2020. In addition to the development programmes prepared by different ministries, the largest political party of the Russian Federation, United Russia (*Yedinaya Rossiya*), also prepared its own forest policy programme "Russian Forests" (*Rossiyskyi les*). The programme was based on the forest political declaration that President Putin gave in a forestry meeting in Syktyvkar, Republic of Komi, in April 2006, and it presented the means by which the party was committed to achieving the plans of Putin.

The basic objectives of the different forest policy development programmes have been gathered in Table 1.3. In this chapter, a closer look will be taken at the newest development programme i.e. the Forest Sector Development Strategy up to 2020. This document was ratified by the Ministry of Agriculture and the Ministry of Industry and Trade on 31 October 2008. The development strategy has not been approved by the government, but as long as the strategy deals with questions under the jurisdiction of the responsible ministries, the ratification of the government is not necessary. Despite the fact that forestry issues are no longer the responsibility of the Ministry of Agriculture, which makes the status of the strategy unclear, Russian officials refer to the strategy in their presentations from time to time, so its implementation is apparently continuing.

The Forest Sector Development Strategy considers an extensive number of different documents as background material: the basic social and economic parameters for 2008–2010, alternative development scenarios prepared by the Ministry of Economic Development for Russian economy up to 2020, the Development Concept of Forestry for 2003–2010, the Main Directions of Forest Industry Development for 2002–2015, energy and traffic strategy up to 2020 and regional long-term forest sector development programmes. The strategy analyses the long-term production scenarios of Russian forest sector products in both international and domestic markets, and gives a prognosis about the development of the demand for domestic products from 2007 to 2020. Regarding forestry, the strategy lists an extensive number of sub-objectives, but does not specify how the objectives should be reached. The strategy introduces two forest sector development scenarios up until 2020: a baseline scenario (*inertsionnyi stsenarij*) and an innovation scenario (*innovatsionnyi stsenarij*). The baseline scenario anticipates no major changes in the current development of the forest sector. The current development pace would continue through the modernisation of existing production plants without major innovations or large greenfield investment. New production would be established mainly in the sawmill and board industry. The innovation scenario assumes the active participation of the state in the development of the forest sector to accelerate real growth. In this scenario, new production capacity would be established, particularly in pulp and paper manufacture, existing production plants would be modernised, new innovations would emerge and domestic forest machine production would flourish. This strategy is based on the structural change in the forest industry where large forest industry corporations are formed to cover the whole cycle from forestry to

wood harvesting and from sawmilling to the final products of the pulp and paper industry. Wood construction is also mentioned as a focus area of the scenario.

The Forest Sector Development Strategy up to 2020 differs from other current development plans in that it includes estimates about the required financing of different scenarios and a plan about financing sources. The need for financing has been estimated for both scenarios for 2008–2020. The total need for investment in the innovation scenario is 2,910 billion roubles (€72 billion), whereas the baseline scenario would need 673 billion roubles (€16.7 billion). In both scenarios, investment into the pulp and paper industry would make approximately 40% of the investment. In the baseline scenario, the share of the wooden board industry would be 33% of the investment, whereas in the innovation scenario about 17%. Investment into the sawmill industry would be 7% in the baseline scenario and 4% in the innovation scenario. The shares of investment into the furniture industry (5–6%) and wood procurement (10–12%) would be almost equal in both scenarios. The innovation scenario would invest significantly more into forestry both in absolute and relative terms. Investment into forestry would comprise 21.5% of all investment in the innovation scenario, whereas in the baseline scenario its share is merely 2.9%. In monetary terms, this would be 626 billion roubles (€15.5 billion) and 19.5 billion roubles (€484 million) respectively. The innovation scenario assumes that investment into forestry is mainly financed from the federal budget. This would double the annual investment into forestry compared with the current 31 billion roubles (€769 million). State funding would increase from 81% in 2008 to 89% in 2020. According to the innovation scenario, investment into the forest industry would increase nearly 50 times from 11 billion roubles (€273 million) in 2008 to 539 billion roubles (€13 billion) in 2020. The main part of the investment (60–70%) would come from actual investors and the rest would be funded from the federal and regional budgets. The share of municipal funding would be 0.7–1.5%.

Unlike many other development programmes, the Forest Sector Development Strategy also includes regional development objectives. It gives regional suggestions by the federal districts and subjects of the Federation. The strategy presents goals for wood harvesting and industrial wood consumption by Federation district by 2020. The target levels are based on the assumptions of the innovation scenario. One of the targets of the strategy is to intensify the use of forest resources in Siberia and the Far East by establishing new wood processing capacities.

A special emphasis in the strategy is given to forest road construction. According to the strategy, the construction of year-round forest roads should be annually 2,167 km and the construction of temporary roads 9,288 km (in 2007, forest road density was only 1.46 km/1,000 ha of forest, 43% being year-round roads). Most roads are planned to be constructed in the northwestern and Siberian federal districts, where the objective is to construct annually 3,000 km of new forest roads.

The general objective of the Forest Sector Development Strategy is to renew the structure of the forest industry by forming large forest industry corporations that would have the resources to take care of the development of silviculture and would have the capacity to produce as high value added products as possible. The clear aim is to protect existing domestic production with customs policy and to facilitate the formation of large corporations by giving privileges to so-called priority investment projects that are considered strategically important. At the same time, the Strategy has been criticized for not giving enough attention to small and medium sized companies.

The examined forest policy development programmes are similar when it comes to the description of the current state of Russian forestry. The subjective viewpoints of the drafters of the programmes is clearly seen in the description of sectoral problems. Problems in forestry are examined strictly from the viewpoints of government officials: the rigid norms and endless regulations are not considered problems, but it is suggested to further increase the normative regulation as a solution to identified problems.

In forest industry development programmes, the poor state of the industry has been recognised. However, it is seen that the domestic industry should be protected from competition instead of opening the market, which would support the evident changes needed by the sector.

Neither of the development programmes can be blamed for being unambitious. The objectives of the programmes are similar. Each programme has so many objectives that their realisation would require large, successful reform. The Development Concept of Forestry for 2003–2010 and the Main Directions of Forest Industry Development for 2002–2015 do not, however, include concrete suggestions for actions to reach the goals set, which has influenced the achievement of the targets. The forest policy programme "Russian Forests" of the political party United Russia is of a declarative nature without timelines, but it does present the main features of the new Forest Code, forthcoming increases in customs duties and support mechanisms for investment projects. The Forest Sector Development Strategy up to 2020 entails the main principles of the forest policy programme "Russian Forests" in a more official form with a schedule and additions.

In practice, many of those regulatory measures that have not been legally binding have remained a dead letter, having very little or no effect on the actual policy being implemented. Many times this has been because of the very general nature of the documents: they have been more of a declarative nature without a real action plan, resources or time schedule. The Forest Sector Development Strategy is a document that guides the responsible ministries on a general level. One indication of the loosely binding nature of the document is the fact that it introduces two rather different future scenarios for forest sector development, although the innovation scenario was chosen as the target scenario.

Rosleskhoz is currently updating the the state programme Development of Forestry 2012–2020. When this report was prepared the revision was not yet available and therefore not included in this study.

Table 1.3 Forest policy development programmes of the Russian Federation.

Identified problems in the Russian forest sector	**Objectives**	**Other comments**
Development Concept of the Russian Federation on Forestry for 2003–2010 / Government Decree from 18 Jan 2003 N69-r (updated with a Government Decree from 28 September 2007 N1305-r)		
Abundance of forests and their low level of utilisation Concentration of harvesting in most valuable coniferous forests Concentration of harvesting in European part of Russia and Urals => increase of deciduous forests in these regions Short lease agreements => lack of commitment of the leaseholders to forest regeneration, fire protection and the construction of forest roads Illegal logging in border areas Insufficient budget funding	To intensify forestry in the European part of Russia and the Urals To grant forest areas for new uses that create new jobs and added value in the southern parts of Siberia and the Far East Construction of 5,400 km of forest roads during 2003–2010 To increase annual harvesting volume by 30–40% to 200 mil. m^3	Objectives of the programme are structural and aim at renewing legislation and administrative procedures Objectives mainly abstract => hard to measure Contents of the programme reflect the contents of the new Forest Code Annual harvesting volume increased by 14% during 2003–2010 (176 mil. m^3 in 2010)
Main Directions of the Forest Industry Development for 2002–2015 / Government Decree from 1 Nov 2002 N1540-r		
Low technical level of production Worn-out machinery of production plants Insufficient investment into production plants Lack of production plants for upgraded products Deficiency of year-round forest roads Increasing energy and railroad transportation costs Significant costs from supporting social structures in remote areas	To fulfil the domestic demand for wood and paper products with competitive, high quality domestic products To integrate Russia gradually to international wood and paper industry markets To increase forest industry production by utilising rationally and fully the forest resources and by optimising the structure of production to use deciduous and low quality raw material Attraction of new investment, increase of productivity, development of machine manufacture, application of environmentally friendly technologies Effective customs policy to protect domestic production	Programme prepared from the point of view of large industry Does not include concrete proposals for action, but lists a set of general suggestions to support the industry (development of legislation, reorganisation of the forest industry sector, effective foreign trade policy, development of innovation activities, development of standardisation certification and leasing, support to investment projects, research, unification of statistics) How to realise or fund the actions is not described
Forest Sector Development Strategy up to 2020 / jointly ratified by the Ministry of Agriculture and the Ministry of Industry and Trade on 31 Oct 2008 N248/482		
Problems in forestry: • Exhaustion of forest resources near current production plants or within the range of good transport connections • Insufficient accuracy of forest resource data • Weak guidance of forest use at a regional level • Significant damage caused by forest fires, pests and diseases • Poor quality of forest regeneration • Low mechanisation of forestry work • Poor forest infrastructure • Amount of illegal loggings • Reduction of biodiversity on areas of intensive forest use	To carry out sustainable forestry through which the raw material and ecological potential of forest resources are maintained and increased Production of competitive, high quality products of the wood processing industry to domestic markets to replace imported goods Improving the socio-economic development of different regions of the country through the growth of the	No concrete suggestion on how to achieve the goals set for forestry Based on the Forest Code Introduces two forest sector development scenarios by 2020: baseline scenario (no major changes, same development pace continues) and innovation scenario (active development measures of the state accelerate growth) Includes estimates about required

Problems in the forest industry: • Insufficient demand for forest industry products on domestic markets over the past 15 years • Lack of production capacity for deciduous and low quality raw material • Lack of innovations and poor attractiveness for investment • Outdated production technology, technological backwardness globally • Insufficient production capacity in value added products • Imbalance in the structure of exports and imports (low value added products vs. high value added products) • Slower development of the forest industry compared with other industries • Insufficient machine production in the forest sector • Poorly developed road infrastructure • Lack of qualified workforce, low salaries and productivity	forest sector Ensuring a safe and stable forest environment that serves the ecological and production needs of society	financing and a plan about financing sources Includes development objectives for federal districts and subjects of the Federation Special emphasis is given to forest road construction No government approval for the strategy Unclear how the change in the position of *Rosleskhoz* will affect the implementation
"Russian Forests" programme (the forest policy programme of the political party Yedinaya Rossiya) / on 9 Nov 2007		
	Renewal of the relationships among forest sector stakeholders and the intensification of forest use Regeneration of forests and battle against illegal wood trade Improvement of forest infrastructure, increase in the degree of processing in the forest industry and improvement in the structure of export Increase in the use of wood products Development of spiritual and ecological traditions, education of the youth	No concrete timelines given Does not separate different regions Patriotic, protecting domestic production and suggesting replacing imported products with domestic ones Global free trade seen rather as a threat than as a possibility

1.2.4 Act on Priority Investment Projects

One of the high priorities of Russian forest policy at the moment is the attraction of new investment into the Russian forest sector. Russia possesses huge potential to become a real mega power in the forest industry, but thus far the country has been an underperformer taking into account its resources. Russia has mainly produced bulk products and exported roundwood but, at the same time, it has been forced to import higher value added products from abroad. Outdated and low capacity production plants as well as a lack of greenfield investment have not contributed to a rise in the forest sector.

The attraction of new large investment, particularly into the pulp and paper industry, has become a necessity for the development of the Russian forest industry. The government's aim is to create large forestry integrates that are able to cover the whole chain from harvesting and silviculture to the production of end products. To support this objective a Government Act No. 419 on priority investment projects was adopted on 30 June 2007. The Act aims to support the modernisation of existing infrastructure as well as the establishment of new capacity and structures in the forest industry by granting large investment projects priority. This status ensures certain privileges to investors. A company with a priority investment status for its

project is granted forest lease areas without having to participate in the normal auction procedures and projects will also get a 50% reduction in forest use payments.

Priority investment status can be granted to projects aiming at the modernisation of existing forest infrastructure or wood processing facilities or to greenfield investment in the forest industry. The required minimum price for a priority investment project is 300 million RUB (€7.4 million). The status of a priority investment project is granted by the Ministry of Industry and Trade based on the proposal of the region in question. In addition to the ministry's approval, the priority investment should also be approved by the Federal Forest Agency.

At the end of 2011, the number of valid projects was 99, with a total value of €10 billion, and estimated demand for roundwood of 65 million m³. One-fifth of the approved projects have been realised thus far. The actual worth of investments during 2008–2011 was €3.7 billion, of which a little over half was used to increase the capacity of sawnwood and wood-based panel production. A list of priority investment projects registered by December 2011 can be found in Table 1.4.

When it comes to the monetary value of these investments, projects seem to concentrate particularly on the Siberian Federal District where the total value of approved investment projects reached in October 2011 already €4.2 billion (in Northwestern Federal District €2.5 billion and Central €1.7 billion). Judged by the number of projects, the most attractive region seems to be the Northwestern Federal District where the total number of registered investment projects was 27 (in Siberia 23, Volga Federal District 15). The rather strong concentration of projects in the Northwest is not in full accordance with the geographical emphases of the forest sector development strategy.

Even though the list of priority investment projects is impressive, and some investment has been realised already, the realisation percentage of the registered projects has been poorer than one might have hoped for. Approximately half of the projects are lagging behind schedule, and four projects have been removed from the priority investment list altogether, because of a slow execution rate. Among them was one of the largest registered projects, the Troitsko-Pechorskiy CBK project in the Republic of Komi, including both a sawmill and a pulp and paper mill.

In some cases, it has turned out that the planned investment projects have been without a real basis for realisation. After the economic crisis, there has been no loose money on the market, and projects without a solid business plan have not found financing. On many occasions, the instigators of the projects have come from outside the forest sector and, therefore, need experienced partners to realise the projects. According to expert estimates, in some cases the priority investment status has been used merely as an excuse to redistribute forest use rights under favourable conditions. Winners in this redistribution of the forests are large companies, whereas small and medium-sized harvesting companies suffer as the amount of available forest resources in auctions reduces. Favouring the big corporations has a negative social impact, particularly on remote areas as the small and medium-sized companies often are significant employers in rural areas.

Table 1.4 Priority investment projects at the end of 2010 (as of 1 Dec 2011).

Company (holding)	**Production, annual capacity** (if known)	**Region**
WOODWORKING INDUSTRY		
Investment < €50 million		
AmurForest	Sawnwood	Khabarovsk
AmurForest	Sawnwood; wood pellets; etc.	Amur
ArgusSFK	Plywood	Sverdlovsk
AVA company	Sawnwood, furniture plates	Omsk
Babushkinskiy soyuz predprinimateley	Sawnwood; furniture plates; wooden briquettes; etc.	Vologda
Baikal-Nordik	Sawnwood	Buryatia
Baikalskaya lesnaya kompaniya	Sawnwood, wood pellets	Buryatia
BioLesProm	Sawnwood, wood pellets	Vologda
Cherepovetsky FMK	Modernisation of production, particle board	Vologda
DOTs plus	Wood pellets, sawnwood	Bryansk
Firma “Master”	Sawnwood	Krasnoyarsk
Forestinvest	Wood processing	Buryatiya
Gazkom	Wood processing	Perm
GornozavodskLesProm	Sawnwood, glued beams	Perm
HarvySeverLes	Glued beams	Arkhangelsk
Hasslacherles	Modernisation of production	Novgorod
Holbit	Modernisation of woodworking plant, sawnwood	Vologda
Ivanovskaya lesopromyshlennaya kompaniya	Sawnwood, wood pellets	Ivanov
Ivanovsky les	Sawnwood, furniture, wood pellets	Ivanov
Kamenskiy LDK (Altayles)	Sawnwood	Altay
Kapital-Z	Further processing of plywood	Perm
KLM-Eko	Glued beams	Krasnoyarsk
Kompaniya Ekoles	Sawnwood, wood briquettes	Jewish auton.
Koskisilva	Sawnwood, plywood	Vologda
Kostamukshskaya stroitelnaya kompaniya KSK	Glued beams and components	Karelia
Krasny yakor	Modernisation of plywood mill	Kirov
LDK No 2 (Vologodskie lesopromyshlenniki)	Sawnwood	Vologda
Lesnaya birzha	OSB production	Buryatiya
Lesopromyshlennaya kompaniya	Modernisation of a sawmill	Ryazan
Lesozavod No. 1	Sawnwood, wooden elements	Komi
LPH Siyaniye	Sawnwood	Tver
Luzales	Modernisation of a sawmill	Komi
MD NP Krasnaya zvezda	Furniture	Udmurtia
Mostootryad-T	Wooden houses, veneer	Amur
Nikolsky les	Sawnwood	Vologda
Novatorsky LPK	Log houses	Vologda
Novovyatsky lyzhny kombinat	Modernisation of production, particle board, parquet board	Kirov
Oka-Holtz	Modernisation of veneer and plywood production	Ryazan
Osetrovski LDK	Plywood	Irkutsk
Patriot	Glued beams, further processed sawnwood	Vologda
PechoraEnergoResurs	Glued beams, furniture plates, wood pellets	Komi
Permsky domostroitelny kombinat	Modernisation of wooden house production	Perm
Permsky fanerny kombinat	Modernisation of plywood production	Perm
PKF Les	Sawnwood, glued beams, etc.	Kurgan
Primorsklesprom	Sawnwood, glued beams	Primorsk
Reshma-Les	Sawnwood	Ivanovo
Rosbioprom	Sawnwood	Pskov
RusForestMagistralny	Sawnwood	Irkutsk
Severo-Zapadnaya lesnaya kompaniya	Plywood	Kirov
Shabalinsky DOZ	Wood processing	Kirov
Sibles	Modernisation of wood processing plant	Krasnoyarsk

Sodruzhestvo (Altailes)	Log houses, wooden elements	Altai
Sokolsky DOK	Modernisation of wooden house production	Vologda
Strojles	Wood harvesting, log houses, etc.	Kirov
SyamzhaLesProm	Sawnwood, glued beams	Vologda
Syktyvkarsky promyshlenny kombinat	Wooden houses, glued beams, etc.	Komi
Tjumensky fanerny zavod	Plywood	Tyumen
Trubchevsky DOZ	Glued beams, etc.	Bryansk
Uralo-Sibirskie investitsii	Sawnwood, particle board, wood pellets	Sverdlovsk
Ustyansky LPK	Sawnwood	Arkhangelsk
Vladimirski LPK	Sawnwood	Vladimir
Vologdaselles	Wood harvesting, sawnwood	Vologda
Vostochno-Sibirsky kombinat biotehnology	Production of biofuel	Irkutsk
Vostochny (Turanles)	Sawnwood	Amur
Vyshnevolotsky lespromhoz	Glued timber elements	Tver
Vysky DOK	Furniture plates	Sverdlovsk
Investment €50–100 million		
Anzhersky fanernyi kombinat AFK	Plywood	Kemerovo
Arkaim	Particle board, sawnwood	Khabarovsk
CentroWoodKom	Sawnwood, wood pellets, etc.	Komi
DalEvroLes	Sawnwood	Khabarovsk
LDK Igirma (Russkaya lesnaya gruppa)	Sawnwood	Irkutsk
Les Eksport	Parquet	Primorsk
Lesopromyshlennaya kompaniya Selena	Glued beams and other construction materials	Baskortostan
MM-Efimovsky	Sawnwood	Leningrad
Rimbunan hijau	Fibreboard (MDF/THDF)	Khabarovsk
Ternejles	Sawnwood, veneer	Primorsk
Vyatsky fanerny kombinat (Investlesprom)	Plywood	Kirov
Investment > €100 million		
Dallesprom (RFP Group)	Veneer, sawnwood, MDF	Amur
DOK Kalevala	OSB	Karelia
Eniseysky fanerny kombinat (Midway United)	Modernisation of plywood mill	Krasnoyarsk
Gagarinsky fanerny zavod (Syktyvkarsky fanerny zavod)	I stage: particle board II stage: plywood	Smolensk
LPK Partner-Tomsk	MDF	Tomsk
Mekran	Construction of a furniture factory	Krasnoyarsk
PDK Apsheronsk	MDF	Krasnoyarsk
STOD	I stage: pellets, laminated veneer lumber (LVL) II stage: OSB, wooden houses	Tver
Trans-Sibirskaya lesnaya kompaniya	Construction of a woodworking plant	Irkutsk
PULP AND PAPER INDUSTRY		
Investment < €500 million		
Arkhangelsky CBK	Modernisation of cardboard production	Arkhangelsk
Ilim Group, Koryazhma	Modernisation of pulp and paper production	Arkhangelsk
International paper	Construction of pulp (BCTMP) mill	Leningrad
Solikamskbumprom	Modernisation of pulp and paper production	Perm
Solombalales	Modernisation of production, pulp	Arkhangelsk
Uralbumaga (PCBK Group)	Modernisation of paper and cardboard production	Perm
Investment €500–1,000 million		
Angara paper	Greenfield pulp mill	Krasnoyarsk
Ilim Group, Bratsk	Construction of pulp mill	Irkutsk
Mondi Syktyvkar	Modernisation of pulp and paper mill	Komi
Segezhsky CBK (Investlesprom)	Modernisation of pulp mill	Karelia
Investment > €1,000 million		
Boguchansky LPK (Kraslesinvest)	Greenfield mill, pulp, sawnwood	Krasnoyarsk
Manturovsky CBK (ASPEK)	Greenfield mill, pulp, sawnwood	Kostroma

During 2009-2010, foreign investment into the Russian forest sector has been declining. This has largely to do with the global economic crisis, but partly also because of uncertainties related to operating in Russia. According to the Federal State Statistics Service (*Rosstat*), 2008 was the most active year for foreign investment into the Russian forest sector. The total amount of foreign investment into wood products and the pulp and paper industry was 2.2 billion USD. As shown in Figure 1.7, the investment rate took a downturn in 2009, but still reached 1.9 billion USD: foreign investment into the Russian pulp and paper industry was 1.2 billion USD and into the wood products industry 682 million USD. In 2010, the investment rate was low, and reached 1.2 billion USD, which is only 54% of the investment in 2008.

According to *Rosstat*, the largest foreign investor in the Russian wood processing industry during 2007–2010 has been Finland. Finnish investment into wood products and the pulp and paper industry amounted in total to 1.3 bil. USD, accounting for over 19% of all foreign investment. Finland was followed by Germany (1.0 bil. USD during 2007–2010) and the UK (0.9 bil. USD). In the wood products industry, Finland was the largest foreign investor during 2007–2010 and its share was almost 28% (0.7 bil. USD). Over one fifth of all foreign investment in the wood products industry came from Cyprus, which can be explained by Russian capital, which had earlier been transferred to Cyprus, returning to Russia. In the pulp and paper industry, the most active investors have been Germany and the UK with 21% (0.89 bil. USD) and 20% (0.86 bil. USD) shares respectively. Finland comes fourth after Austria with a 15% share (0.6 bil. USD).

Most of the significant global forest industry companies have investigated the possibilities of investing into the Russian forest sector. Thus far, investment into pulp and paper manufacture has been, however, scarce. Before 2010, there had been no greenfield investment into the Russian pulp and paper industry for 30 years. In 2010, Ilim Pulp and International Paper announced a plan to build a new pulp line in Bratsk mill in the Irkutsk region.

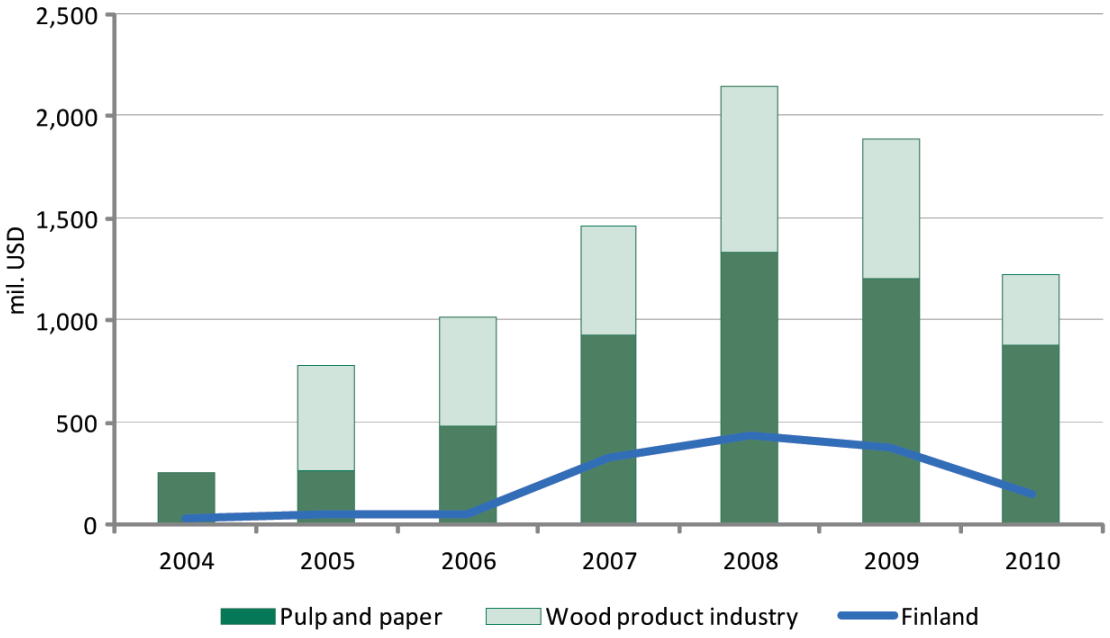


Figure 1.7 Foreign investment into the Russian forest sector in 2004–2010. Source: *Rosstat*

Even though priority investment status gives certain privileges to the investment projects, there are still factors hindering the willingness of particularly foreign investors to invest in Russia. The deficiencies in legislation, insufficient protection of property rights and investment, over-excessive administration and lack of transparency are some of the factors mentioned by investors as risks when investing to Russia.

1.2.5 Other Legislation Affecting the Forest Sector

Russian forest policy is not only regulated through forestry legislation, but it is also affected by the legislation of other sectors of the economy. One of the most effective means of normative regulation with a clear impact on the forest sector has been Russia's active customs policy with the aim to protect domestic forest industry production and machine construction by influencing the international trade.

From the point of view of the Finnish forest industry, the most significant policy change in Russia over the past few years has been the decision to increase export duties on roundwood. The instigator of this decision was President Putin with a speech to a forestry meeting in Syktyvkar, Republic of Komi, in April 2006. In his speech, the President criticised heavily the large volumes of exported roundwood and pointed out the imbalanced structure of Russian foreign trade: Russia exports roundwood and imports high value added forestry products, which means a cash flow, not in, but out of the country.

The presidential scolding resulted in a quick establishment of a new customs tariff programme for roundwood. Customs duties themselves were not a new phenomenon – Russia had previously collected export duties on round- and wastewood – but the newly introduced duty increases were clearly directed at bringing the exports to a total halt. The first increases in the export duties after Putin's speech were seen in June 2006 when the export tariff for coniferous roundwood was raised from 2.50 €/m^3 to 4 €/m^3. A year later on 1 July 2007 a new increase was introduced raising the export duties for coniferous wood and over 15 cm diameter birch roundwood to 20% of the export value or at least 10 €/m^3. These wood assortments experienced yet another increase in tariffs on 1 April 2008 when duties were increased to 25% or 15 €/m^3.
The next step would have been the increase of export duties to 80% or 50 €/m^3 at the beginning of 2009. This would have meant a complete stop for all roundwood export from Russia to Finland. However, at the end of 2008 Russia backed down from taking the final step. The implementation of the final increase of export duties to 50 €/m^3 was postponed twice: at the end of 2008 and 2009. The reason for backing down from the final decision was most likely related to the poor state of domestic harvesting companies. Previous export increases had had a negative impact on many Russian harvesting companies, decreasing the income from wood exports, and the global economic downturn in 2008 made the position of these companies even more difficult. The decision to postpone the export duties was officially explained by the general economic downturn that was delaying new investment into the wood processing industry. However, it must be stated that without the economic crisis there would have been too little time to build the necessary new capacity in the forest industry and, therefore, the decision of the Russians to increase the duties at such a quick pace seems hasty. It not only wiped out several harvesting companies and demolished established procurement chains, but it also weakened the whole structure of wood procurement in Russia. Many foreign companies that had developed well-working wood procurement organisations in Russia decided to downsize their activities. For example, in the mid-2000s company Stora Enso had a larger wood procurement organisation in Russia than it did in Finland and the possible re-establishment of

such a large organisation would not be unproblematic. Most likely the situation had an impact on investment plans of the Finnish companies in Russia.

The political rough and tumble around the customs duty question received a part solution at the end of November 2010, when Russia and the European Union agreed on the terms for Russia to join the World Trade Organisation (WTO). Export duties for roundwood were one of the last obstacles preventing Russia's membership from an EU point of view, and in the negotiations Russia agreed to substantial export duty reductions. According to latest information, the customs duties for coniferous roundwood will be reduced approximately by half from the current level and tariffs for birch and aspen will be 7% and 5%, respectively. The reductions will come into force when Russia joins the WTO, which is expected to happen during 2012. However, according to recent information, Russia will introduce an export quota on unprocessed coniferous timber after it has joined the WTO. Timber exported under the quota will be taxed at a rate lower than the current duty, while sales abroad exceeding the quota will be levied at a higher rate. The EU quota for pine and spruce will be 9.3 million m^3. The quota will not concern deciduous tree species.

The Russian membership in the WTO will also have a significant impact on customs duties of forest industry products. Import duties for wooden doors and windows will reduce approximately by half (new duty levels 10% and 12% respectively). Currently, the import duty levels for forwarders and timber trucks vary between 25–30%, the new tariffs will be 5-10%, which will be a significant reduction.

In addition to increases in customs duties, several other policy measures have also been targeted towards roundwood export. In June 2006, at the same time as the first increases in customs tariffs, a requirement to sort imported roundwood according to diameter was introduced. This requirement caused a lot of confusion at the Finnish–Russian border, and after a while the full implementation of the decree was given up. In March 2008, Russia reduced the number of customs stations that had the right to declare roundwood, which increased the wood transport costs of Finnish companies. The Russian overweight permit system for trucks was also seen to favour Russian truck companies. Changes in declaring harvesting machinery that had been temporarily exported to Russia have also hindered the return of the machinery to Finland. Russia has aimed to support the modernisation of its own production capacities by reducing import customs duties for advanced technology that is not available in Russia, but it is also protecting its own production by imposing import duties on those machines that have an equivalen in Russia. Russian customs policy will be discussed in more detail in the next chapter.

1.3 Structure of the Forest Industry Trade – Have the Objectives of the Forest Policy Been Achieved?

This chapter examines Finnish–Russian forest industry related trade and studies how the active policy measures particularly related to customs duties have influenced the structure of trade between the countries. The review is started from roundwood and continued by looking at the trade of certain value added forestry products that have experienced fluctuation in customs duty levels during recent years.

Roundwood exports from Russia to Finland peaked in 2005 when the total exports of roundwood and wastewood with bark exceeded 17 million m^3 constituting more than one-fifth of the total wood consumption of Finland (Figure 1.8). Exports took a clear downturn after the

first announcement of the customs duty increases in 2006, but regardless of this, Finland imported in 2007–2008 approximately 1 million m^3 of Russian roundwood per month. Exports grew slightly in the second half of 2008 as Finnish companies increased their wood procurement from Russia in preparation for the significant increase in export duties at the beginning of 2009. Even though the duty increases were postponed at the end of 2008, the export of roundwood plummeted sharply and hit rock bottom in January 2009. The sharp decrease of exports concerned all wood assortments including birch pulpwood, which had a 0% customs duty, and thus the threat of increasing export duties was not the only reason for the decline, but the general economic crisis influenced too. Indirectly, however, export duties did have an effect: because of the lurking export tax increases, the Finnish pulp and paper industry made substantial reorganisations in 2008 by cutting down production capacity and redirecting existing capacity to production that would be less dependent on Russian wood. During 2008, large Finnish forest companies also made substantial cutbacks in their Russian wood procurement organisations. Along with the economic crisis this resulted in a sharp decrease in roundwood imports to Finland. The same kind of decrease can be seen also in the export of roundwood to China.

In 2010, the volumes of exported roundwood from Russia increased. The volumes were, however, still modest. The 2010 export volumes were 7.4 million m^3, which is only 61% of the volumes in 2008. One important factor that will most likely have an impact on the long-term plans of Finnish forest companies in Russia is the Russian membership in the WTO.

What is noteworthy is that the export of forest industry by-products such as wood chips, sawdust, pellets, and so on did not experience a decrease at the beginning of 2009. On the contrary, their export volumes increased. A reason for the distinct increase in the export of by-products was obviously the more favourable export duties (sawdust and wastewood 0%, wood chips 5%, firewood 6.5%). In 2010, the export of by-products remained at the same higher level as that in 2009, but as the volumes of exported roundwood increased towards the end of the year, roundwood again passed the exported volumes of by-products.

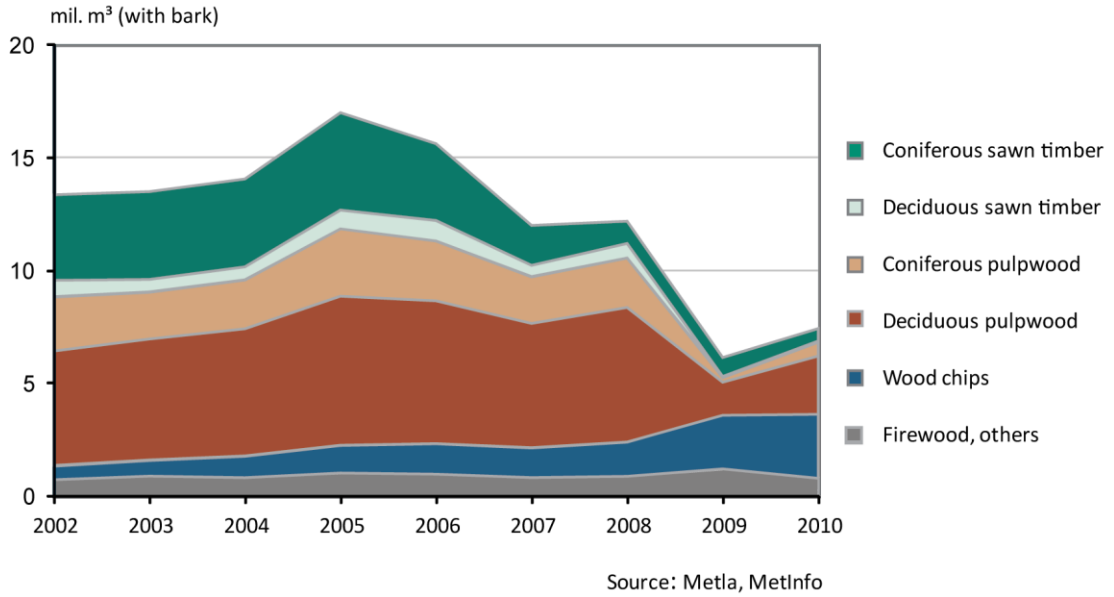


Figure 1.8 Exports of Russian roundwood and wastewood to Finland during 2002–2010.

When it comes to import taxes of forest industry products, Russia protects its domestic forest industry production from foreign competitors most commonly with a 15% import duty. For the protection of domestic wood products, Russia imposed in the 1990s a higher 20% tax on wooden windows and doors. For prefabricated wooden houses the import tax was first 30%, but in 2001 it was reduced to 20%. The taxes have remained at a fairly stable level for the past decade, which indicates that the duties set are enough tight to protect domestic production. The production of high value added forestry products in Russia has not yet reached the level that would cover the demand in the country and, therefore, the import of goods is necessary. As the standard of living has grown in Russia, the consumption of forest industry products has also increased, creating a huge market for foreign manufacturers. In 2010, Russia was the fourth most important single country in Finnish forest products export after Germany, the UK and the USA. The value of exports to Russia was €522 million, which is a little under 5% of the total value of foreign exports. Measures of Russian forest policy do not seem to have a huge impact on the Finnish export of most forest industry products to Russia; the export volumes seem to reflect more the development and current state of the Russian economy. Oil price has a great impact on the development of the Russian economy. When the price for oil goes up, the Russian economy grows, and this has a clear effect on the demand of paper and other forest industry products too.

The one line of production that has had more fluctuation in import duty levels is forest machinery manufacture. One of the central aims of Russian forest policy has been to modernise the forest sector from wood procurement to wood processing. To achieve this goal Russia has exempted those machines and equipment from import taxes that are not manufactured in Russia. This applies particularly to pulp and paper machines and equipment (CN8439, CN8441) and to some wood working machinery (CN8465). The rest of the items in the latter category (CN8465) have a 5% import tax. When it comes to harvesting machinery, the import tax level for harvesters has been relatively low (5%). They were totally exempted from tax at the beginning of 2007 (except for a short period at the end of 2009). The domestic production of harvesters is relatively small in Russia and, thus, the need to protect domestic production is relatively marginal. The import duty level for forwarders has been higher (15%) than that for harvesters, and it was still increased to 25% in 2009 and even to 30% in some cases in 2010. This can be considered a protective duty for domestic forwarder production. With a duty increase, Russia is trying to drive foreign manufacturers to transfer their production to Russia.

Monthly volumes of exported harvesters from Finland to Russia (Figure 1.9) grew until 2008 following the general trend in the Russian economy. The most active years of import were 2007–2008, the former having several record-breaking months in a row. By autumn 2008, imports started to slow down and came to a complete stop at the beginning of 2009. The situation in Russian harvester markets was very similar to trends in global harvester markets as the trade of machines slowed down because of the economic crisis. In 2010, the monthly volumes of exported machines rose after the crisis and reached approximately the level of 2005, which represented an average year during the 2000s. It is hard to estimate the effect of the exemption of harvesters from import duty from January 2007 to October 2009 as that period happened to be the peak of the general uptrend in the Russian economy. However, similar to paper and many other forest industry products, it seems that the 5% import duty was not a decisive factor in making a sale, but that import volumes were more dependent on the prevailing economic situation in Russia.

When looking at the export of forwarders and timber trucks from Finland to Russia in 2002–2010, the effect of import duties looks quite different. The 25% import duty has been blocking quite effectively the export of these transportation vehicles. The export of over 20 ton vehicles (Figure 1.10) and under 20 ton vehicles (Figure 1.11) has recovered from the dive at the end of 2008 much slower compared with harvesters and the export of used over 20 ton machines has almost stopped. In 2010, export volumes rose from the slump at the beginning of 2009, but the number of exported machines is still only one-third of the volume of an average year in the 2000s.

To some extent, Russia has succeeded in its policy to pressure machine manufacturers to transfer their production to Russia by increasing import duties. The high import duty for forwarders and timber trucks has also forced Finnish manufacturers to consider their options to start producing machines in Russia. However, this is an option only for the largest companies with a solid financial standing. One of the companies to enter the Russian market as a machine manufacturer is John Deere, which opened its new manufacturing and parts distribution facility south of Moscow near Domodedovo airport in 2010. The Domodedovo facility is the company's largest single investment to date in Russia and it will manufacture agricultural, construction and forestry machinery as well as distribute service parts in the region.

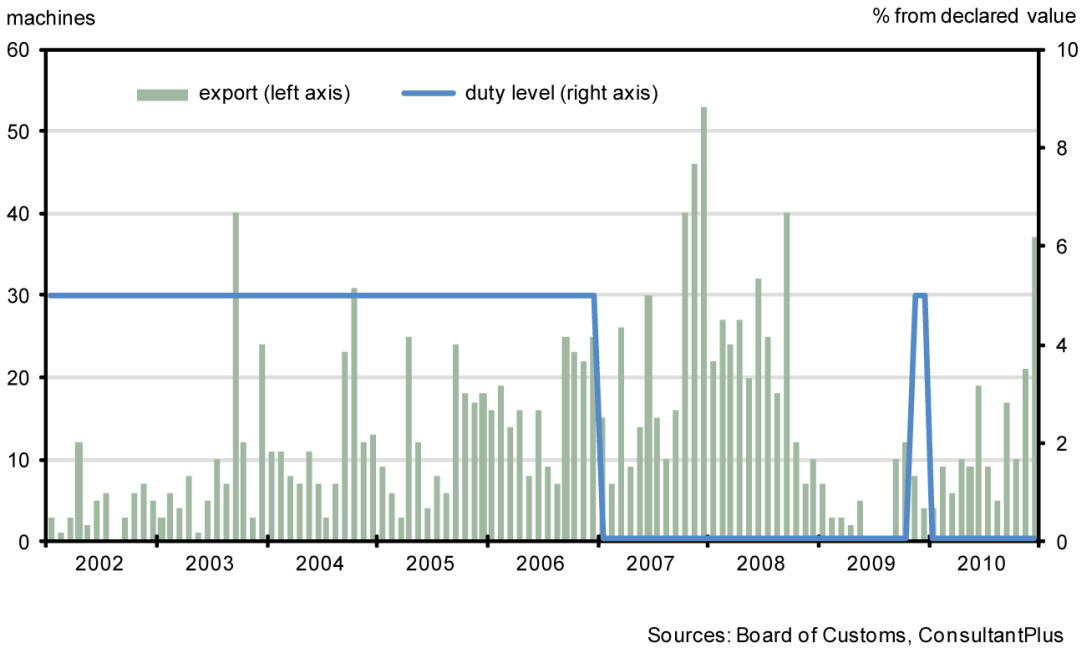


Figure 1.9 Monthly export of harvesters from Finland to Russia and Russian import taxes during 2002–2010. **Note!** CN8436 80 10 also includes combimachines, chippers, firewood processors and other forestry machines.

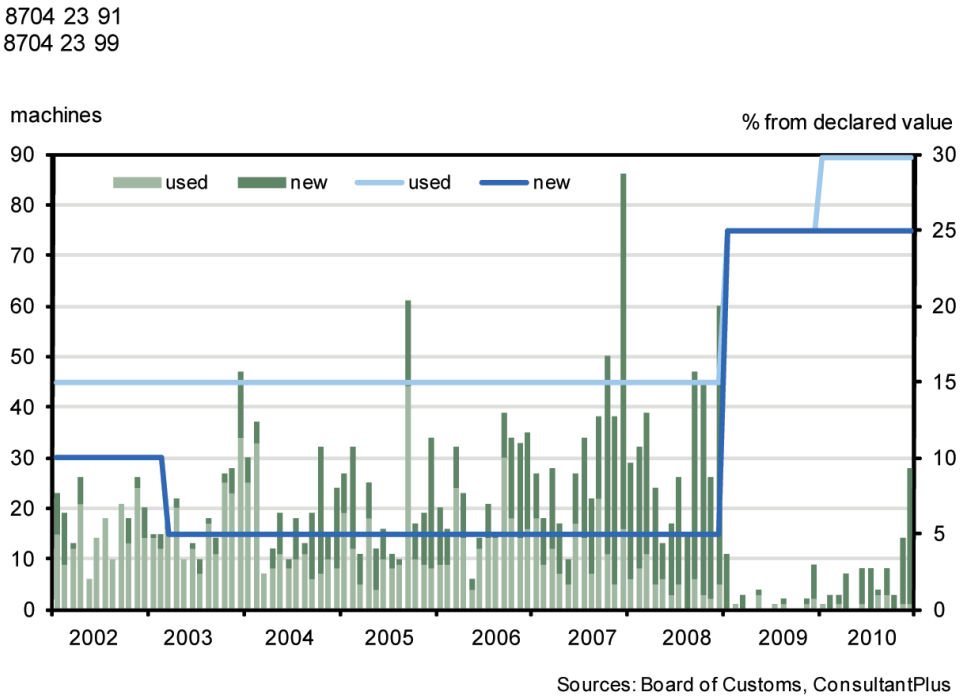


Figure 1.10 Monthly export of over 20 ton vehicles (incl. forwarders and timber trucks) from Finland to Russia and Russian import taxes during 2002–2010.

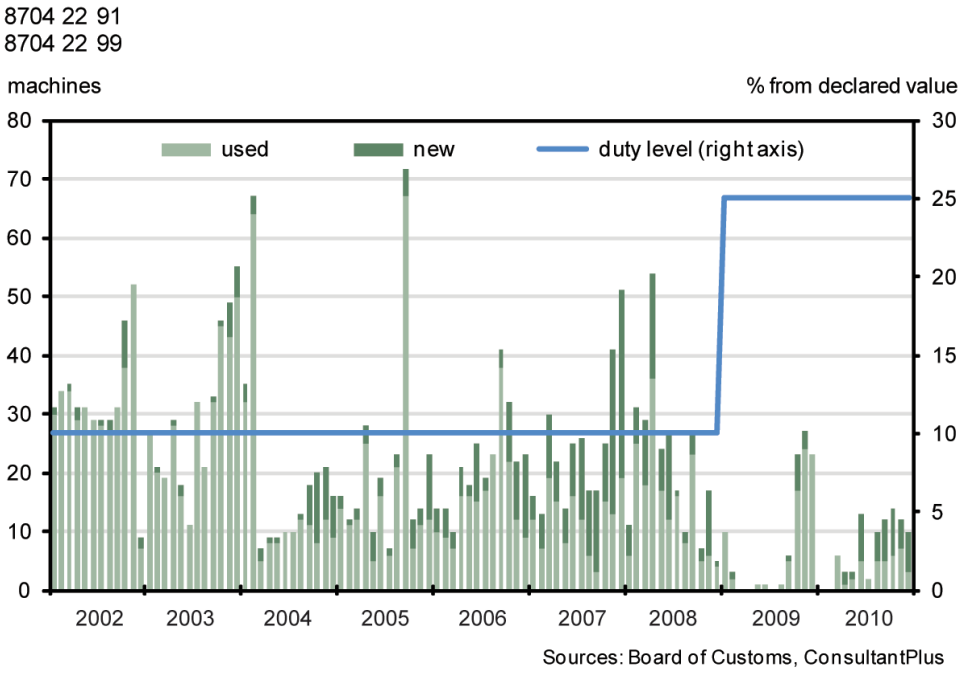


Figure 1.11 Monthly export of under 20 ton vehicles (incl. forwarders and timber trucks) from Finland to Russia and Russian import taxes during 2002–2010.

1.4 Comparison of Wood Harvesting and Forest Regeneration Guidelines in Northwest Russia and Finland

The principles of forest management in Finland and Northwest Russia are fairly similar (Figure 1.12). Forest regeneration is preceded by a final felling that then also determines the regeneration method. The regeneration phase is followed by forest growing, where the main emphasis is on the management of the growing stand. This is followed by final felling/regeneration after which the cycle starts again from the beginning.

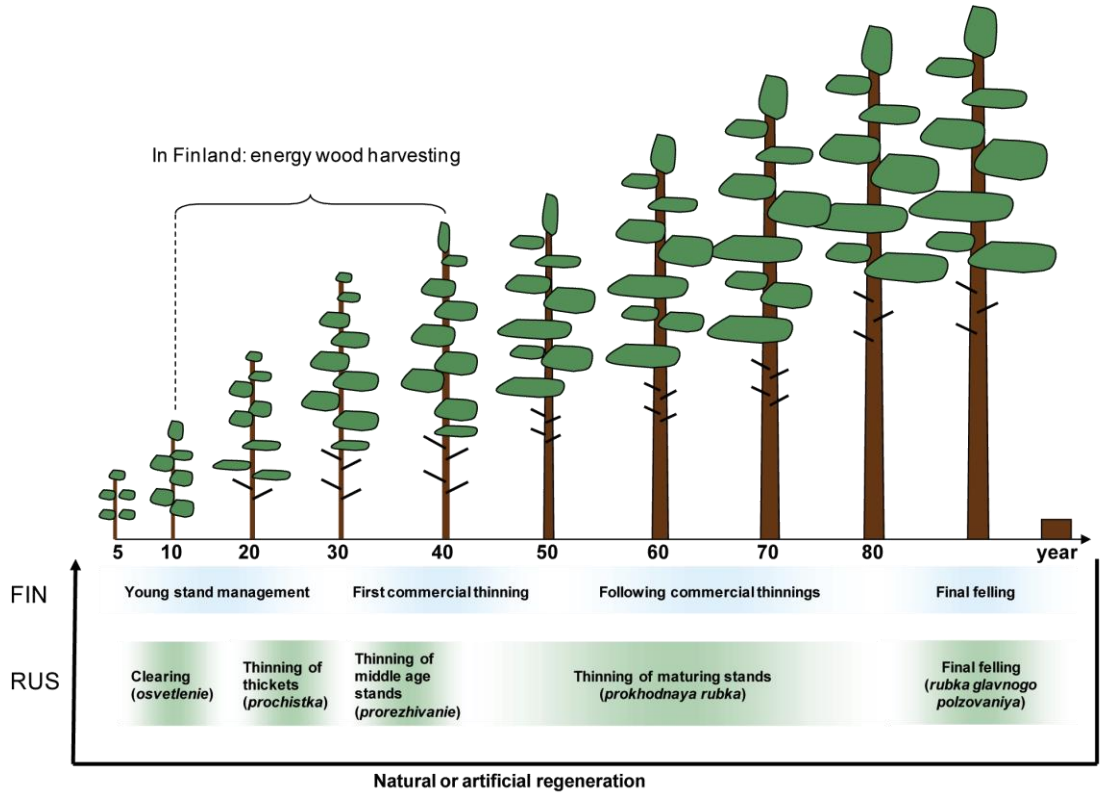


Figure 1.12 Finnish and Russian harvesting cycles in pine forests.

A general difference between the Finnish and Russian forestry guidelines is in the amount of control they impose on forest users. In Russia, forestry operations are regulated by the Forest Code and different guidelines that are issued by the state forest administration. These guidelines are very detailed, and they regulate forestry operations much stricter than those in Finland do. One of the weaknesses of Russian forestry guidelines is that they have been prepared for the whole of Russia, which makes it impossible to take into account local growing conditions and other specifics. Complying with the general guidelines in different natural conditions is rigid, and this does not necessarily bring out the best possible result.

In Finland, forestry operations are regulated by the Forest Act (Forest Act 1093/1996) and different decrees and regulations by the Ministry of Agriculture and Forestry. These normative documents set the minimum requirements that forest users should meet in forest management. However, different organisations have prepared their own forest management recommendations (Forestry Development Centre Tapio for private forests, Finnish forest and park service

Metsähallitus for state forests), in which the recommended levels, for example, for the density of young stands are higher than is required by the legislation.

A principle difference between the Finnish and Russian forest legislation is in what they regulate. The Finnish legislation and other guidelines aim to set the minimum requirements for the forest *after* the operation i.e. to tell the forest user what is the desired minimum outcome of the operations – the methods how to achieve this are largely up to the forest user. The Russian legislation, by contrast, also regulates the methods for *how* things should be done. This is not always cost efficient and may result in non-optimal forest operations, for example, in too heavy soil preparation, very high number of seedlings planted or too light thinnings. Thus, the Russian guidelines have been criticised for not taking into account the economic efficiency of forest operations.

One methodological difference between the Finnish and Russian forestry guidelines is that in Russia harvesting operations are scheduled according to the age of the trees, whereas in Finland stand age is only a secondary parameter and harvesting maturity is mainly determined by tree diameter. This is a significant difference when speaking about the intensification of Russian forestry: as long as, for example, the moment of clear cutting is based on the age of the stand, the operations for intensification will not generate results to their full potential.

The reason why the freer Finnish system works stems from the general forest management culture of the country, which aims at long-term profits from well-managed forests. Finland has a long tradition of private forest ownership and the state owns only one-quarter of the forest area. Most private owners are motivated to manage their forests well for better yield, and local forest authorities also organise guidance and training for owners. A reason for the stricter guidelines in Russia is the need to control forest actors that have different levels of education. Large companies would most likely manage fine with less regulation, whereas the low level of worker training would impose a threat to the forests in small companies without a proper internal audit or chances of the further training of personnel.

1.4.1 Forest Regeneration

In principle, the methods of forest regeneration in Russia and Finland are similar. In both countries, the basic regeneration methods are natural and artificial (sowing, planting) regeneration. In addition, Russia has a combined (*kombinirovannoe*) regeneration method, which mixes elements of natural and artificial methods. In practice, the combined method is also used in Finland, when natural regeneration is supported on artificial regeneration sites by soil preparation or by saving undergrowth. This increases biodiversity and the density of artificially regenerated stands as well as ensures the development of economically valuable seedling stands, which utilises the full production potential of the site.

Even though the regeneration methods are similar in both countries, there is a significant difference in the shares of natural and artificial regeneration between Finland and Russia. Whereas in Finland the share of artificial regeneration is approximately 80% and natural 20%, in Northwest Russia the shares are the opposite – natural 80% and artificial 20%. This difference is for many technical, economic and social reasons, but it is also a result of a principle difference in approach. In Russia, artificial regeneration is used on sites where the generation of economically viable stands using natural or combined regeneration methods is not possible. In Finland, the most important criteria in selecting the regeneration method are the

certainty, profitability and cost of regeneration. The aim is to create, during a reasonable time period, a new, economically valuable forest that is suitable for local growing conditions. The cheapest method (natural regeneration) is not necessarily the most profitable one, when calculating the total costs up to first commercial thinning. If natural regeneration has not been successful, soil preparation and planting have to be performed on a site grown over with grass and sprout forest, which increases costs and also delays the formation of a new young stand.

In Russia, in addition to the Forest Code, forest regeneration is regulated by detailed guidelines, which determine, for example, regeneration methods, the size and number of viable undergrowth and seedlings and the methods for their inventory, soil preparation methods for artificial regeneration (e.g. in mountain conditions) and growing densities for different species. In Finland, forest regeneration is regulated by the Forest Act (Forest Act 1093/1996), the Act on Trade in Forest Reproductive Material 241/2002 and other decrees and regulations published by the Ministry of Agriculture and Forestry. These documents set the minimum requirements regarding forest regeneration and forest reproductive material (seeds and seedlings). In addition, regeneration recommendations are prepared by different organisations for their own forests. Forest certification criteria also include a number of guidelines regarding forest regeneration.

Table 1.5 illustrates some of the similarities and differences between Finnish and Russian forest regeneration guidelines. Different forest regeneration practices in Finland are compared with Northwest Russian practices as these two geographical regions are similar when it comes to forest growing conditions.

Soil preparation is considered much more important in Finland than it is in Northwest Russia. In Finland, both research and practice have shown that soil preparation is a necessity in most site conditions. The insufficient preparation of soil is one of the biggest problems in forest regeneration in Northwest Russia. Most forest floor in Northwest Russia is easily grown over with grass after clear cutting, and thereby regeneration without soil preparation is often doomed to failure. The reason for insufficient soil preparation in Russia is the lack of money and suitable machines. Frequently, it is possible to use only one type of machine on a regeneration site because of long distances and poor infrastructure even though the site conditions might require the use of several machines and preparation methods.

In Northwest Russia, natural regeneration is most often pursued by retaining undergrowth or second tree storey in clear cutting. The method is mostly applied to spruce. Retaining undergrowth is, however, associated with a number of problems: the understorey is often so old that its recovery is slow and uncertain; harvesting and skidding often damage and destroy the remaining tree storey; and the distribution of the trees is rarely optimal as the trees grow in groups. Until recently, Finnish forestry professionals have been hesitant to using retained understorey. Only in the 1990s, when ecological aspects and the profitability of silviculture (increasing labour costs) became more important, has the utilisation of undergrowth become more common.

Sowing spruce is a fairly common regeneration method in Northwest Russia because seeds have been available. According to Finnish experiences, the results from sowing spruce have not been encouraging, neither in Finland nor in Northwest Russia. Therefore, Finnish guidelines recommend mainly planting spruce.

Table 1.5 Comparison of Finnish and Northwest Russian forest regeneration guidelines and practices. Finnish guidelines comply with the recommendations of the Forestry Development Centre Tapio.

	NW Russia	**Finland**
Soil preparation	Owing to long distances, poor infrastructure and lack of machines not always performed	Considered necessary both in artificial and natural regeneration except for the most barren and dry soils
Saving of understorey (natural regeneration of spruce)	The most common means of assisted natural regeneration	Recoverable understorey is saved if it is healthy and in good condition, as long as the regeneration area is large enough and the site conditions are suitable for spruce
Seed trees	Not widely used. Number of seed trees per hectare is a minimum of 20 and the distance between seed tree groups is less than 100 m	A common method of natural regeneration. Altogether, 50–150 good quality seed trees are left per ha, partly in groups
Planting	Non-pricked-out seedlings at least 4,000 seedlings/ha, on dry sites 6,000 seedlings/ha; pricked-out seedlings and container seedlings at least 2,500 seedlings/ha	Pine 2,000 seedlings/ha, spruce 1,600–1,800 seedlings/ha and silver birch 1,600 seedlings/ha
Sowing of pine	4,000–5,000 sowing spots	4,000–5,000 sowing spots
Sowing of spruce	Widely used	Not used, earlier experiences bad
Planting material	Use of container seedlings scarce (one-fifth in the Republic of Karelia, small numbers in the Arkhangelsk, Leningrad and Murmansk regions and in the Republic of Komi)	95% container seedlings

The use of seed trees is rare in Northwest Russia. However, in scientific studies Russians have come to similar conclusions to Finnish ones regarding the use of seed trees, and the recommendations for their use are similar on both sides of the border. Given the shortage of good quality seedlings for planting, the use of seed trees is an economically rational option in Russia, particularly on dry and fairly dry soils. A problem of using this method might be that Russian forests are often over-dense and thinned from above, which might make it difficult to find good quality seed trees. In addition, windfalls may be a risk on sites that have not been thinned.

The biggest difference between Finnish and Russian regeneration guidelines is in the required stand density. In Finland, the recommended planting density for pine is 2,000 seedlings/ha, for spruce 1,600–1,800 seedlings/ha and for silver birch 1,600 seedlings/ha. According to Russian guidelines for forest regeneration (2007), planting density for non-pricked-out seedlings is at least 4,000 seedlings/ha, on dry sites 6,000 seedlings/ha and for pricked-out seedlings and container seedlings at least 2,500 seedlings/ha. The likely reason for these large differences in planting densities is because Russian guidelines anticipate a death of a proportion of the seedlings and want to be on the safe side to ensure that the remaining seedlings are able to produce a sufficiently dense forest. Increasing planting density is not, however, a cost efficient solution. Planting is expensive (planting 1 ha of forest in Russia costs twice the price of that in Finland), and given the poor soil preparation it is almost impossible to find the necessary number of good places for planting a seedling, which decreases the chances for the good growth and even survival of the seedlings. Moreover, the distance between seedlings remains short, which increases the risk of fungal infections. Also, if planting is successful and all trees start to grow, a proportion of the planted trees should be removed in later young stand treatments, which generates unnecessary costs.

In Finland, forest regeneration aims to reach the desired result as economically as possible. This is done by planting fewer good quality seedlings in well-prepared soil and saving resources for aftercare (young stand management) as the first years are the most critical for the survival of the seedlings. For example, the target density of a pine stand is the same in Finland as planting density in Northwest Russia, but this density is achieved in Finnish conditions by complementing planted seedlings (2,000 seedlings/ha) with naturally grown pine, spruce and birch.

Both in Finland and in Northwest Russia, there is room for improvement in the amount of young stand management performed. According to the 10th National Forest Inventory, 700,000 ha of young forest are in the need for young stand management in Finland and the area is growing. Annually approximately 230,000 ha of young stands are treated. In 2006, approximately 50% of the planned young stand treatments in Northwest Russia were carried out. In Russia, there is a need to close the gap between the regeneration and aftercare of new growth (grass eradication, clearing, thinning). Currently, the activities are considered separate, and the regeneration and tending of forests have their individual guidelines.

1.4.2 Wood Harvesting

In Russia, wood harvesting is regulated by the Forest Code of the Russian Federation and several guidelines (timber harvesting regulations, thinning regulations, establishing felling age, calculating annual allowable cut) issued by the Federal Forest Agency. These guidelines determine, for example, allowed harvesting methods, harvesting sites, harvesting intensity and the organisational requirements for harvesting (i.e. storage and transport routes).

In Finland, wood harvesting is regulated by the Forest Act (Forest Act 1093/1996) and different decrees and regulations by the Ministry of Agriculture and Forestry. These documents set the minimum requirements regarding forest harvesting. In addition, different organisations have their own recommendations, which are typically higher than those required by law.

The number of different harvesting practices in Russia is over 100, whereas in Finland there are only 10–20. This explains the more straightforward approach to forest management in Finland compared with Russia. In Russia, forests are managed rather extensively and wood procurement is mainly based on wood from final fellings. The share of clear cuttings from the overall area of harvesting in Northwest Russia is approximately 50%, whereas in Finland it is 25–30%. The reason for the low rate of thinnings in Russia is in their low economic profitability. This is because of the current thinning regulations, which insufficiently consider the economics of forestry operations and aim at maintaining the existing stand composition rather than improving it. From a legislative point of view, the Russian approach to thinnings has traditionally been different from the Finnish one: thinnings have not been seen as a source of income but rather as a sanitary or ecological operation.

In Finnish forestry, the used harvesting practice is determined not only by silvicultural but also technical and economic aspects. Regarding thinnings, Finns aim for intensive, infrequent thinnings that are economically profitable. First commercial thinnings are not necessarily profitable, but they are important for future profits as they improve the quality of the stand. Later thinnings give the forest owner 800–1,500 €/ha depending on the stand. The majority of income is generated from final fellings (5,000–10,000 €/ha), but through improved stand quality, it is calculated that timely thinnings may double the overall income from a stand.

Russian guidelines do not allow intensive thinnings, and this lowers the economic efficiency of the cuttings. Thinning intensity is based on reducing the relative density of the stand i.e. on removing a certain percentage of the existing stock. In some cases, the allowed thinning intensity is so low that after clearing the strip roads it is impossible to harvest anything else. This makes no sense from a silvicultural or an economic viewpoint. Overly dense stands grow slower, which might have a positive effect on the density of wood material, but also subjects the trees to disease. In addition, overly stocked stands fail to maximise the volume increment of the stand: the living tree crowns grow shorter, which has a negative effect on the growth and vitality of a tree (Figure 1.13). According to Finnish recommendations, the share of a living crown from the height of the tree should be 60% for spruce, 50% for birch and 40% for pine.

Figure 1.13 Overly stocked stands fail to maximise the volume increment of a stand. A site after thinning in Segezha, the Republic of Karelia. (Photo: Ari Rautio/Metsähallitus)

The problems with a too low thinning intensity apply particularly to operations performed by harvesters and forwarders: with 5 m strip roads and a 20 m distance between the strip roads, the thinning intensity of an initial thinning is at least 22–25%, while an average thinning rate assigned by the state forest inventory enterprises varies from 15% to 20%. This problem is related to outdated harvesting guidelines that do not consider the rapid renewal of harvesting technology in Russia as the use of cut-to-length technology has become more common. The current guidelines and legislation have been designed for traditional tree-length and full-tree harvesting methods.

Table 1.6 illustrates some of the similarities and differences between Finnish and Russian forest harvesting regulations. Different forest harvesting practices in Finland are compared with Northwest Russian practices as these two geographical regions are similar when it comes to forest growing conditions.

Another factor affecting the profitability of Russian thinnings is the requirement to mark all trees to be removed. This is time consuming, but because of the low level of the training of forestry workers it is often seen as the only means to ascertain the quality of the remaining stand. In Finland, harvester operators are capable of determining the trees to be removed by themselves as they perform the logging, which saves a lot of time and money in the long run. Training is one of the essential prerequisites to improve the profitability of harvesting in Russia.

The collection of harvesting residues facilitates soil preparation and forest regeneration. In shore areas, it is also a way of decreasing the nutrient loading of water bodies. In Finland, the collection of harvesting residues is not required by law, but the use of wood for energy has made it fairly common. According to Finnish guidelines (Forestry Development Centre Tapio), the collection of harvesting residues is recommended on fresh or more fertile soils as well as on grassy and *Myrtillus* type peat lands. It is recommended that 30% of logging residues are left on the harvesting site to compensate the nutrient loss from harvesting. According to Russian regulations, harvesting residues should be gathered for fire safety reasons as well as to create more favourable conditions for forest regeneration. Branches, tops and other non-commercial wood should be collected during the period of the harvesting licence by stacking residues for further use as energy or for burning them on site, piling the residues on strip roads or chipping the residues and using the chips for soil improvement. The collection of harvesting residues on a 230–280 m^3 spruce clear cut site may cost approximately 5,000 RUB/ha (circa 110 €). For comparison, in Finland a forest owner selling a 250 m^3 spruce stand may gain 1 €/m^3 i.e. 250 € from selling harvesting residues and stumps for energy.

One noticeable difference in Finnish and Russian harvesting regulations relates to water protection. When it comes to harvesting, a way to reduce the nutrient flow into water bodies is to leave buffer zones. The magnitude of the buffers is, however, strikingly different in Finland and in Russia. In Russia, the width of the buffer zone is determined by the area of the water body, and the width may vary from 50 to 500 m depending on the surface area of the water. The Water Code of the Russian Federation prohibits clear cuttings within the buffer zone, but thinnings are allowed. The vastness of the buffer zones has caused problems, for example, in the Karelian Isthmus near St. Petersburg, as significant forest areas are located within water buffer zones. In Finland, the buffer zones are much more modest and their width can vary from 3 to 30 m depending on the vegetation and relief of the terrain. In Russia, the purpose of the buffer zones is to reduce the negative impact of harvesting and other economic activity on water bodies. This includes both the flow of nutrients and other foreign matter into water bodies and the protection of lake and lakeside ecosystems. In Finland, buffer zones have been established primarily to reduce phosphorus and nitrogen load into water bodies, but also to protect biodiversity. It has been calculated that forestry causes 8% of the nitrogen loading of water bodies and 6% of phosphorus in Finland. In 1998, Finland set itself a target to halve the phosphorus and nitrogen load in water bodies from the 1993 level by 2005. According to estimates, the load of phosphorus has reached the objective, whereas the load of nitrogen is still significantly higher than desired.

Table 1.6 Comparison of Finnish (Central Finland) and Russian forest harvesting regulations valid for Northwest Russia. The Finnish regulations comply with the forest management recommendations of the Forestry Development Centre Tapio and harvesting recommendations of company Metsäteho.

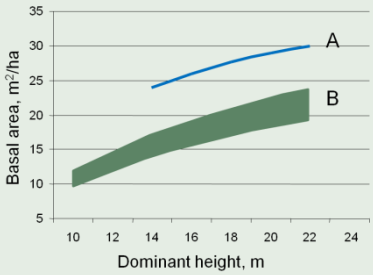
	NW Russia	**Finland**
Age of final felling	Age of final felling for pine and spruce 81–160 years, for birch 61–80 years and for aspen 41–60 years depending on the region and forest zone	When mean diameter reaches for pine 22–28 cm, spruce 25–30 cm and birch (*B. pendula*) 26–30 cm OR when the mean age of a stand is for pine 80–130 years, spruce 70–100 years and birch 60–70 years
Outlining of a harvesting site for final felling	Outlined rectangularly on flat terrains, maximum size 50 ha for clear cutting (in some cases 75 ha) and 50–100 ha for selective cuttings depending on the type of cutting	Outlined according to the terrain adjusting it to the forms of the landscape, maximum size not determined
Outlining of a harvesting site for thinnings	Outlined according to the size and form of the stand	Outlined according to the terrain adjusting it to the forms of the landscape
Thinning intensity	Based on relative density	Based on basal area and dominant height
Outlining strip roads for final fellings	Strip road area must be less than 20% of the total harvested area, in the case of a fully mechanised harvesting system less than 30%	According to the terrain, adjusted to the forms of the landscape
Outlining strip roads for thinnings	Strip road area must be less than 15% of the total harvested area	According to the terrain, adjusted to the forms of the landscape, distance between strip roads more than 20 m, width of strip roads 4.0–4.5 m
Outlining road-side storages for clear cutting	Harvesting area >10 ha – less than 5%; <10 ha – 0.3–0.4 ha. Tree-length or full-tree method with seasonal stocks – less than 15% with soil damage less than 3%.	Maximum size not determined
Outlining road-side storages for thinnings and selective cuttings	Harvesting area >10 ha – less than 3%; <10 ha – 0.25 ha.	Maximum size not determined
Harvesting damage in final fellings	Damage of young trees and undergrowth must be less than 30% in clear cuttings and 20% in selective cuttings. Damage of remaining trees in final selective cuttings must be less than 5%.	No special requirements mentioned
Harvesting damage in thinnings	Less than 2–3% of remaining trees and 10–20% of undergrowth depending on forest group	Stem and root damage less than 4% from remaining trees Rut depth less than 4% of the length of the strip roads
Collection of harvesting residues	Required	Not required
Buffer zones along water bodies	Along rivers 50–500 m, < 2 km^2 lakes 300 m, > 2 km^2 lakes 500 m	Normally 5–10 m
Marking trees before thinning	Living trees to be removed should be marked	Not done
Height of stumps	Prohibition on leaving high stumps (>10 cm or one-third of butt diameter)	<10 cm from the highest ”neck” of the stump
Leaving single trees or tree groups in final felling	Leaving of single trees prohibited	Retention trees left, particularly old trees, aspen and hard deciduous species favoured

Basal Area vs. Relative Density

When determining harvesting intensity, Finnish regulations are based on the use of basal area and the dominant height of a stand, whereas the Russian regulations rely on relative density (Figure 1.14). Relative density (*otnositel'naya polnota*) is the relation between the basal area of a stand and the basal area of a theoretically normal forest (a standard forest structure against which existing forest structures can be compared) with a 1.0 density.

Finnish system:

The Finnish system is based on thinning models that are determined for different tree species and parts of the country. The models are illustrated by simple tables based on the basal area and the dominant height of a stand:



A – thinning recommended
B – recommended basal area after thinning

After determining the basal area and dominant height of the stand it is easy to determine the need for harvesting: when the basal area of the forest reaches the blue line, the forest is thinned so that the basal area drops to the green area.

Russian system:

The relative stand density (RSD) is calculated as the ratio of the basal areas of the inventoried stand (ΣG) to the theoretically fully stocked monoculture stand ($\Sigma G_{1.0}$):

$$RSD = \Sigma G / \Sigma G_{1.0}$$

where
ΣG = basal area of the inventoried stand, m^2
$\Sigma G_{1.0}$ = basal area of the theoretical normal forest, m^2

The basal area of the theoretical normal forest is obtained from regional standard tables based on tree height and bonity class (the table below is an example of a table for pine forests):

Height, m	Bonity class							
	Ib	Ia	I	II	III	IV	V	Va
15	36.3	33.9	32.4	31.2	30.2	29.1	28.2	27.3
16	37.8	35.4	33.7	32.5	31.3	30.3	28.9	27.7
17	39.4	36.9	35.1	33.6	32.3	30.8	29.4	–
18	40.8	38.3	36.3	34.7	33.1	31.5	29.9	–
19	42.3	39.7	37.6	35.7	33.9	32.2	30.4	–
20	43.7	40.9	38.7	36.7	34.7	32.8	30.7	–
…								
25	50.0	46.5	43.4	40.5	37.5	34.9	–	–
…								
30	54.6	50.5	46.5	42.6				

Thinning is allowed when the relative stand density exceeds 0.8. After a thinning the relative density for pine must not drop under 0.5–0.7 depending on the age (height) and site class of the stand.

Figure 1.14 Finnish (left) and Russian system (right) for determining thinning intensity.

Determining the relative density is more complicated compared with the Finnish system, where the harvester operator can follow the remaining stand density easily using a simple relascope. The accuracy of determining the relative density is dependent on the suitability of the standard tables to the particular conditions of the stand in question. There has been discussion among Russian forestry professionals about changing to a more simple system that would be easier for forestry practitioners to use in the field. However, determining relative density has been a classical method in forestry for decades, and the change would mean a huge training assignment for the forest administration and practitioners along with updating all forestry guidelines to correspond to the new system.

1.5 Discussion and conclusions

Even today, Russia is sometimes criticised for not having a forest policy. These allegations are, however, untrue. The Forest Code, Act on Priority Investment Projects, different forest sector strategies and current customs policy all aim at increasing the intensity of forest use; producing competitive, high quality products by the wood processing industry to serve domestic markets and replace imported goods; attracting new investment; and improving forest infrastructure. These objectives are consistent across all policy papers. However, the status of the existing policy framework is rather weak. Legislation has its shortcomings, and the implementation of forest sector strategies is limited. Frequent changes in power relations, normatives and administrational structures have made it difficult to make, and particularly to follow through, long-term plans.

Constant change has been characteristic of Russian forest policy since the 1990s. The legislation has been renewed three times in addition to more than 20 amendments or revisions. Forest administration has experienced four major reorganisations and powers have been transferred among federal, regional and local levels back and forth five times. The positive effect of these changes and reorganisations is somewhat questionable. Each reorganisation causes at first extra work and requires some time to adjust to the new system. Changes in power relations may make it difficult to carry out earlier agreed development plans. In earlier studies, it has been reported that too frequent changes may also result in the demoralisation of the workforce and lower the motivation of the workers. Some evidence of this can be seen also in Russia: the regard for forestry professionals has declined and a lot of the workforce has either chosen or been forced to seek work elsewhere.

It seems that Russia has been able to identify the problems of the forest sector and to define the target state to aim for, but it has been struggling to come up with the means to achieve the targets set. In this respect Russia is lacking patience: many times decisions have been made without adequate preliminary preparation and the same decisions have been retracted a few years later just as quickly. Rather than basing decisions on proper analysis with scientifically analysed consequences, the prevailing method seems to have been decision-making through trial and error. There have been problems in governance and coordination with policies of other sectors influencing the forest sector.

One of the problems in establishing a long-term forest policy has been the unstable position of the highest Russian forest authority. The many changes in the high command of the Federal Forest Agency have made it difficult to establish a clear view on the necessary development of the sector. In addition, in many cases the views of forestry professionals have been brushed aside in decision-making, and significant decisions have been made outside the forest sector. In traditional Russian working culture, the highest administrative level is unreceptive to criticism and criticising the decisions of your superiors may have resulted in facing the axe. This kind of working environment is not fruitful for putting forth new ideas or examining critically the deficiencies of the current system.

The discrepancies and shortcomings of the legislation and newly developed forest planning documents have forced practical forest users to find ways to bypass normative regulations, which is not good for the general obedience to the law. Vague legislation and contradictory guidelines have caused a lot of confusion and have hindered practical forestry. The different forest sector development strategies have not really influenced the practical forestry yet and

they would need more concrete targets, solid follow-up and more financing to back them up, otherwise their objectives will not be reached.

The Act on Priority Investment Projects has brought to the public almost a hundred new large-scale forestry investment projects, and even though many of them are lagging behind schedule this kind of government support to boost necessary investments is needed. However, attention should be paid also to SME's which are ofter important employees in rural areas.

When comparing the situation of the Russian forest sector to the forest sectors of other former Eastern European socialist countries, it is evident that turning around an ocean liner is harder than changing the course of a speedboat. Therefore, the decision to grant executive power on forest management to the regions is rational. However, the federal level should find the courage to let the regions decide genuinely on regional matters. The need for regional forest management guidelines is obvious: in a huge country such as Russia, general guidelines for the whole country – even with regional specifications – are too general and do not apply to all growing conditions.

A real reform of the Russian forest sector would need a clear strategy with decisive leadership and adequate financing. The effective training of forestry workers is imperative for successful reform. Russia should also strengthen policy-related research in the forest sector to take advantage of previous experiences. Starting from the speech of President Putin in Syktyvkar in 2006, the highest leadership in the country has taken an interest in the real development of the forest sector. The transfer of *Rosleskhoz* under the direct subordination of the government and the tripling of its personnel are actions that strengthen the position of the forest sector in government-level decision-making. It can be hoped that this will reflect on the funding of the forest sector, as a successful reform would need government funding to restore the base of intensive forest management: infrastructure, qualified personnel and quality of silviculture. However, increasing of funding without rationalizing operating procedures will not give the needed result.

WTO membership is believed to open new export markets and investment opportunities to foreign companies. This would provide much needed security and stability to the markets, and hopefully provide sufficient guarantees for the continued and reliable supply of wood raw material. Regarding the Finnish forest industry, the news about the reduction in roundwood taxes after WTO membership was positive. However, the Finnish industry has already partly adapted its production to the decline of Russian roundwood exports. Even though the reduction in taxes is partly against the Russian strategy to reduce raw material exports, it also gives Russia an opportunity to turn the situation to its advantage in the long-term. There is definitely enough wood to be used domestically and exported for export income. Russia can allocate the revenues from roundwood exports to the development of domestic production, which is strategically important for the country. The export of roundwood may also have a positive influence on the availability of raw materials domestically, which helps develop the production in the home country. Particularly concerning foreign investment and trade, WTO membership is a positive signal already in the short run and for the development of the whole forest sector in the longer run.

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2 Impact of Russian Roundwood and Sawnwood Exports on Markets – a Finnish Perspective

2.1 Introduction

Over the past 20 years, the focus of global wood markets has changed considerably. In the early 1990s, wood procurement was typically organised within national borders, and the import volumes of roundwood were generally rather marginal with respect to that of total roundwood consumption. Along with the increase in international trade and the abolishment of trade barriers such as customs duties, international roundwood trade also increased during the 1990s. This development was also because of the mergers of forest industry companies and their subsequent aims to become more internationally orientated and to organise wood procurement multinationally to increase their net revenues and market shares.

The Russian Federation and the People's Republic of China have had an especially significant effect on the international roundwood and sawnwood markets. The total export volumes of Russian roundwood increased from 10 million m^3 in 1992 to over 50 million m^3 (without bark) in 2006. Moreover, because of the worldwide economic slowdown and consequent decrease in roundwood demand and, especially, because of the customs tariff programme for roundwood exports, total export volumes collapsed to about 22 million m^3 in 2009. Economic growth in China has changed considerably the international streams of raw materials. Recently, China became the most important global importer of roundwood and its role in both the roundwood and final products markets is still increasing.

The recent pattern in Russian sawnwood exports has been a steep upward trend, which has resulted in Russia regaining and strengthening its position in international sawnwood markets. With the recent annual exports of about 15 million m^3 of coniferous sawnwood, Russia is now the second largest exporter of sawnwood in the world. This has inevitably increased competition, especially in the main market areas of Europe, Asia and Northern Africa. Simultaneously, increasing export volumes and unit values have emphasised the importance of sawnwood as a generator of income in the Russian forest sector. Currently, the value share of sawnwood from the total value of Russian forest sector exports is the highest among forest product groups.

This chapter briefly reviews the development of roundwood and sawnwood exports from Russia and identifies the main reasons that have affected these exports. The viewpoint is a Finnish one, and thereby we describe the kinds of effects the roundwood trade between Russia and Finland has had on Finnish wood markets, traded volumes and domestic roadside prices. Russian sawnwood exports are analysed by focusing on the markets where Finnish sawnwood has traditionally played an important role. Finally, we discuss in which direction roundwood and sawnwood exports from Russia are likely to develop in the near future.

2.2 Roundwood Exports

2.2.1 Development of Roundwood Exports from Russia

At the beginning of the 1990s, exported roundwood volumes were rather small compared with total removals in Russia. In 1992, the share of exports with respect to total fellings was less than 5%. However, the export share began to rise sharply, and in 1999 the share had increased to slightly less than 20%. Even though exported roundwood volumes increased from 14.4 million m^3 to 28.3 million m^3 between 1992 and 1999, the main reason for the increase in export share was that annual industrial roundwood removals decreased rather rapidly after the economic reforms. According to the database of the UNECE Timber Committee, total removals in Russia were 228 million m^3 in 1992, while in 1999 annual removals collapsed to only slightly over 143 million cubic metres.[2] The highest export share of nearly 27% was in 2006. After that, both removals and export volumes decreased sharply because of the worldwide economic slowdown, diminishing demand and, especially, because of the implementation of a customs tariffs programme for roundwood exports (Figure 2.1). In 2009, total export volumes were less than 22 million m^3, constituting 14% of total removals.

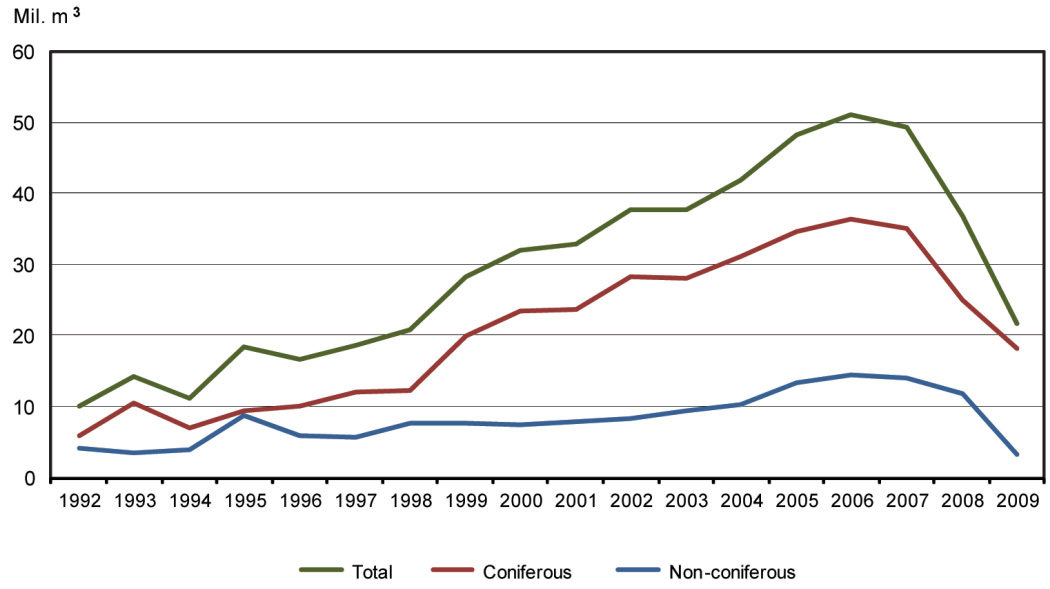

Figure 2.1 Roundwood exports from Russia, 1992–2009 (Faostat, UNECE).

Along with the development in total export volumes and the distribution of assortments, the destination of Russian roundwood exports has also changed considerably. Russian roundwood is exported to over 50 countries. Within the European Union, Nordic countries and Baltic states have been the main customers of Russian roundwood. During the 21st century, however, the most important trading partner, measured by volume, has been China (Figure 2.2), which has replaced Japan as the most important destination of Russian coniferous roundwood. In 1997, nearly half of the total exports of coniferous roundwood were directed to Japan, which used mostly sawlogs for construction purposes. Since then, Japan's share of coniferous exports has

[2] In fact, the removals recovered in 1999 after their lowest level in 1996, when they were only slightly over 100 million m^3. The reasons behind the collapse of removals and increase in roundwood exports are well documented in the studies given in the References.

decreased sharply, even though the annual trading volumes – with the exception of recent years – have remained around 5 million m^3. At the same time, however, along with the economic development and growth, China's need for raw materials has been emphasised in global roundwood markets. According to the UN Comtrade database, China imported only half a million m^3 of coniferous roundwood from Russia in 1997, while in 2009 the imported volumes were over 15 million m^3. According to official figures, China imported almost 150 million m^3 of coniferous roundwood from Russia during 1997–2009.

Along with Japan and China, other significant trading partners for Russia in coniferous roundwood have been Finland, South Korea, Sweden, Estonia, Germany, Turkey and Norway. During 1997–2009, both Finland and Japan imported about 50 million m^3 of coniferous roundwood from Russia. In 2002, the combined coniferous trade to China, Japan and Finland constituted 80% of total exported volumes. In 2009, the combined share of these three countries was as high as 94%. China's share alone was 84%.

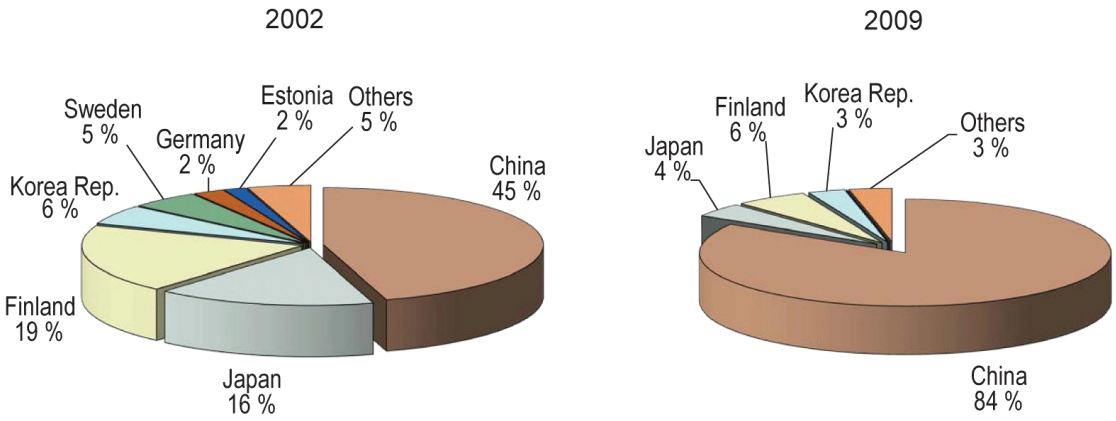

Figure 2.2 Coniferous industrial roundwood exports from Russia in 2002 (28.4 mil. m^3) and 2009 (18.3 mil. m^3) (UN Comtrade).

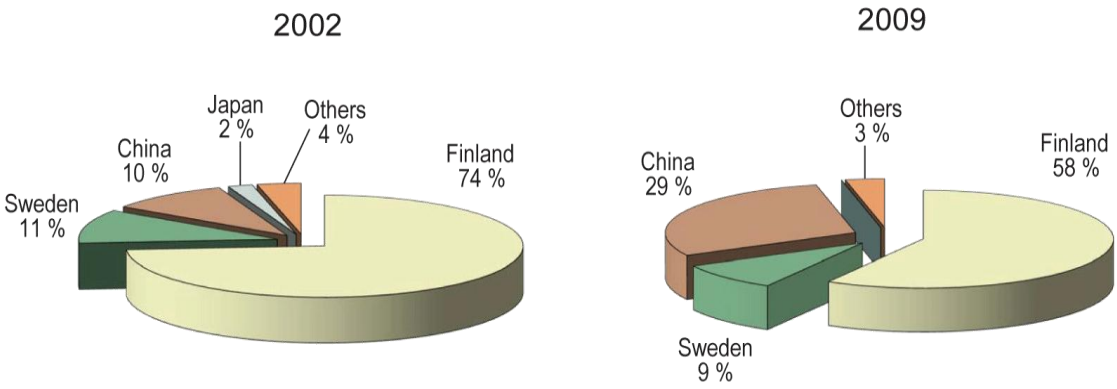

Figure 2.3 Non-coniferous industrial roundwood exports from Russia in 2002 (8.2 mil. m^3) and 2009 (3.1 mil. m^3) (UN Comtrade).

For non-coniferous industrial roundwood, the most important trading partner has been Finland (Figure 2.3). In 2002, over 70% of the total volumes of non-coniferous roundwood exports were transported to Finland. Other significant destination countries have been Sweden, China and Japan. During the 21st century, the export share of Finland has slowly diminished but over half of the total volume of non-coniferous roundwood was still shipped to Finland in 2009. Traded

volumes, however, have decreased sharply over the past two years. China has increased its share of trade, whereas the role of Sweden and, especially, Japan has decreased. The combined export share of other countries has been only marginal.

2.2.2 Roundwood Exports to Finland

To understand the significance of Russian roundwood for the Finnish forest industry and its effects on national wood markets, it is essential to compare traded volumes to those of the total consumption of industrial roundwood and removals in Finland. The total use of industrial roundwood in Finland increased from slightly less than 50 million m^3 in 1992 to about 75 million m^3 in 2007 and since then it decreased again to about 51 million m^3 in 2009, the year of heavy cutbacks in the Finnish forest industry (Figure 2.4).

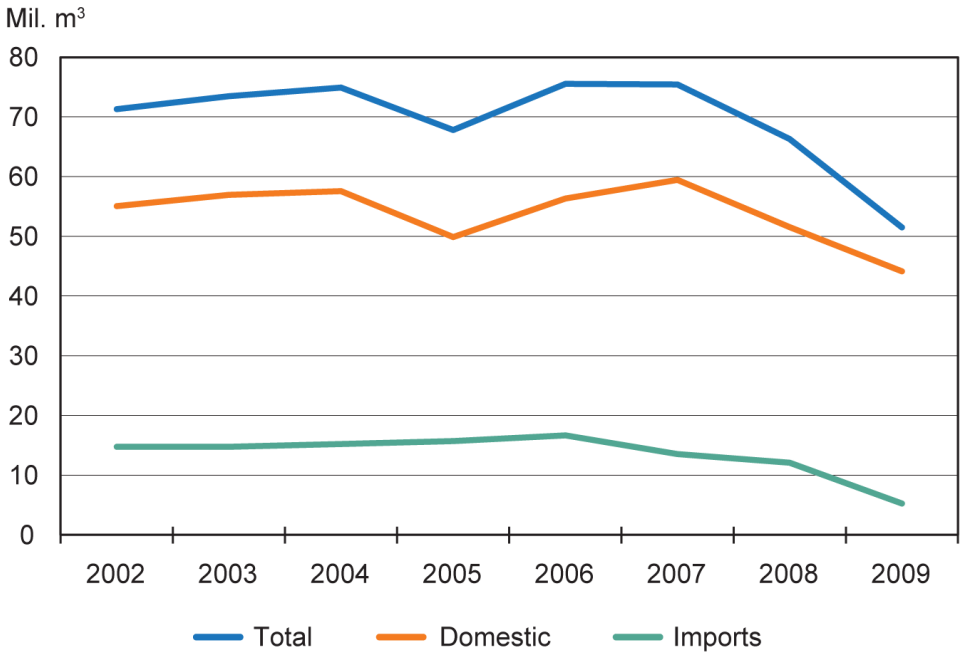

Figure 2.4 Roundwood consumption and imports by forest industry in Finland, mil. m^3, 2002–2009 (Metinfo, Finnish Customs).

Until 1998, the increase in industrial roundwood use was mainly because of the increase in domestic removals, while total imports (including industrial roundwood, fuelwood, chips and wood residues) increased only modestly.[3] Since then, the increment of annual wood consumption from about 65 to 75 million m^3 has been mainly based on growing roundwood imports. A record year for the use of imported roundwood and total use of roundwood was 2006, while the use of domestic roundwood was at its highest in 2007.[4] The temporary slowdown in roundwood consumption in 2005 was because of the labour market dispute in the

[3] While the annual domestic use and removals of roundwood in Finland are closely related to each other, the statistics of the former show a few million m^3 more because of storage from previous years.

[4] One should note the distinction between roundwood imports and the consumption of imported roundwood. The former was at its highest in 2005, while the all-time record year for the latter was 2006.

paper industry. Since then, the reduction in capacity in the forest industry, especially during the economic recession 2008–2009, has decreased the total use of industrial roundwood in Finland and thereby resulted in a diminishing need for domestic and exported roundwood. Of course, one important reason for the decrease in imports was the gradual fulfilment of the customs tariff programme for roundwood exports by Russia, which made it unprofitable to use roundwood of Russian origin.

Between 2000 and 2005, roundwood imports into Finland, measured by total volume, were rather stable. In the record year of 2005, total imports of industrial roundwood, chips, fuelwood and wood residue accounted for 21.5 million m^3 of which industrial roundwood consisted of almost 18 million m^3. In the post-Soviet era, Russia has been the most significant roundwood trade partner for Finland. Consistently, an average of over 80% of total annual roundwood imports have originated from Russia. In 2005, the combined volume of coniferous and non-coniferous roundwood imports from Russia accounted for almost 15 million m^3. However, during 2006–2007, felling conditions were difficult in Russia, and not all the planned winter fellings were realised. The increasing lack of economically profitable stands and expanding domestic demand for roundwood in Russia decreased the share of Russia in total roundwood imports into Finland. In 2007, however, the share of Russia with respect to total roundwood imports was still 66%.

In 2008, total roundwood imports from Russia remained at the same level as the year before. The declaration by the Russian Federation in November 2008 that the fulfilment of the customs tariff programme for roundwood exports would be postponed to the end of 2009 did not affect annual import volumes. In 2008, total import volumes from Russia were about 12 million m^3, of which industrial roundwood was less than 10 million m^3. At that time, Russian roundwood constituted 60% of total imports into Finland. In 2009, total roundwood imports into Finland were less than half those in 2008, only about 9 million m^3, two-thirds of which originated from Russia.[5]

Over the past two decades, the majority of roundwood imports into Finland have consisted of birch, especially birch pulpwood (Figure 2.5). Trading volumes, however, have been rather volatile over the years and the share of birch has varied from 50% to almost 90% of total trade. The Finnish forest industry's consumption of birch has been more than one-third higher than the maximum sustainable level of annual removals of birch in Finland. Thus, about half of the needed birch, especially birch pulpwood, has been imported. The possibility of importing pulpwood from Russia increased the Finnish forest industry's interest in expanding paper production capacity during the 1990s. The increase in sawmilling capacity in Finland in the late 1990s was also – at least partly – motivated by the possibility of importing sawlogs from Russia (Figure 2.6).

In the early 1990s, imports of pine pulpwood comprised about 15–20% of the total trade from Russia. Since then its relative magnitude has decreased to about 10%, even though traded volumes were rather stable until 2009. Along with the decreased total need for pine pulpwood, the recent objective and strategy of Finnish forest companies is to procure the needed amounts from domestic markets with the urgent need to implement first thinnings of pine-dominated stands.

[5] The percentage shares in the main text refer to total imports. The import share of Russian roundwood consumed by the Finnish forest industry decreased from 88% in 2002 to about 62% in 2009.

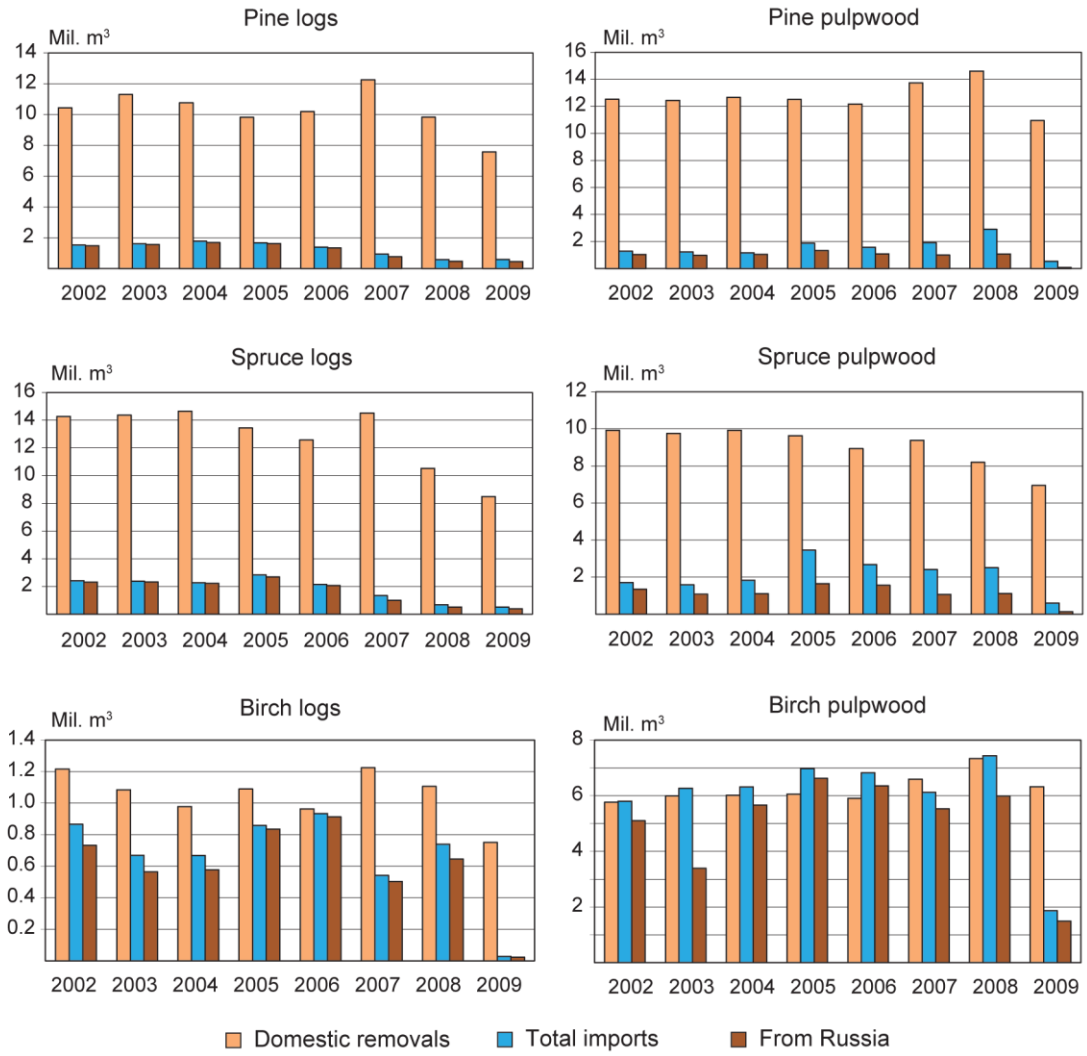

Figure 2.5 Removals and roundwood imports into Finland, mil. m^3, 2002–2009 (Metinfo, Finnish National Board of Customs).

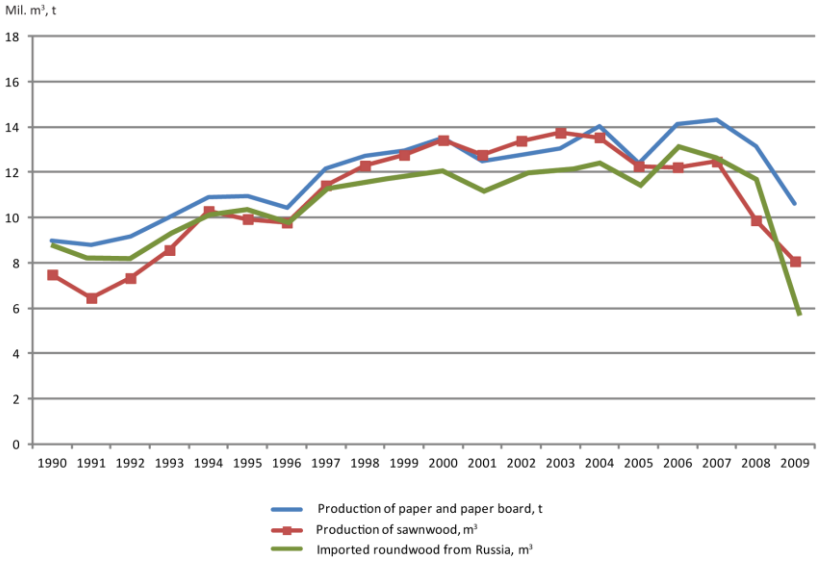

Figure 2.6 Production quantities in Finnish paper and board and sawmill industries with roundwood imports from Russia, 1990–2009 (Forest Industries Federation, National Board of Customs).

Traded volumes of spruce, especially spruce sawlogs, have increased since the turn of the millennium. The expansion of spruce plywood capacity and the rise in coniferous sawnwood production during the 1990s were partly related to the possibility of using larger amounts of imported coniferous logs. In 2005, as much as 2.8 million m^3 of spruce logs were imported into Finland, which accounted almost one-fifth of the total roundwood trade from Russia. In addition, the magnitude and proportions of other assortments slightly increased from the mid-1990s before total volumes reduced from 2005 and collapsed in 2009.

Although the implementation of the customs tariff programme for roundwood exports caused roundwood imports from Russia to Finland to diminish fundamentally, conversely the imports of chips have increased sharply over recent years (Figure 2.7). There are two reasons for this development. First, along with the closures of sawmills and the decrease in total domestic wood consumption, the amounts of sawmill chips and dust, which are mainly consumed by the Finnish pulp industry, have also decreased. Second, the Russian customs tariff programme did not concern chips. Thus, the decreased domestic supply was clearly replaced by increasing the import of chips. In 2009, as much as 2.3 million m^3 of chips were imported from Russia, which constituted about 73% of total imports and almost one-quarter of the total use of chips by the Finnish forest industry. A proportion of the imports presumably originated from sawmills owned by international Finnish forest industry concerns.

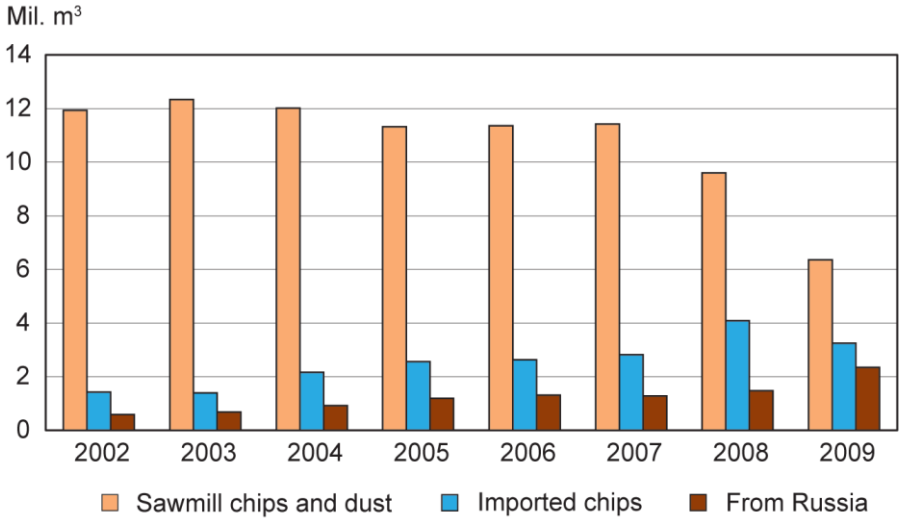

Figure 2.7 Domestic sawmill chips and dust and imports into Finland, mill. m^3, 2002–2009 (Metinfo, Finnish National Board of Customs).

Along with the total roundwood volumes transported into Finland, the unit prices of different species have also fluctuated significantly. In Figure 2.8, a comparison between domestic roadside prices and Russian roundwood prices at the border by species is presented for 2002–2010. As can be seen, prices were somewhat close to each other until 2007. After the implementation of the export tariff rises, the border prices of Russian roundwood, especially pulpwood assortments, have clearly deviated from domestic roadside prices. Moreover, the border prices of Russian roundwood have been more volatile than have Finnish delivery prices. In addition, until 2007 Finnish delivery prices generally exceeded the border prices for sawlogs. In the cases of birch and pine pulpwood, Russian roundwood prices were higher during the whole study period. The effect of the global demand peak for final forest industry products in 2007 was also considerably higher for pulpwood prices imported from Russia than for Finnish delivery prices. Generally, however, the economic explanation for these higher imported prices

is that it is profitable for the industry to pay higher prices for marginal volumes.[6] This, however, requires that because of imperfections, the Russian and Finnish roundwood markets are not integrated and, thus, arbitrage does not level out price differences. Indeed, the evidence of market imperfections prevailing in the Finnish pulpwood market is ample.

Theoretically, the impact of imported roundwood on the Finnish roundwood market depends on the possible substitution effects between imported and domestic assortments. Typically, an increase in domestic roundwood price should increase the demand for imports if the assortments are substitutes in production and vice versa. In the case of complements, an increase in domestic (import) price should decrease import (domestic) volumes.

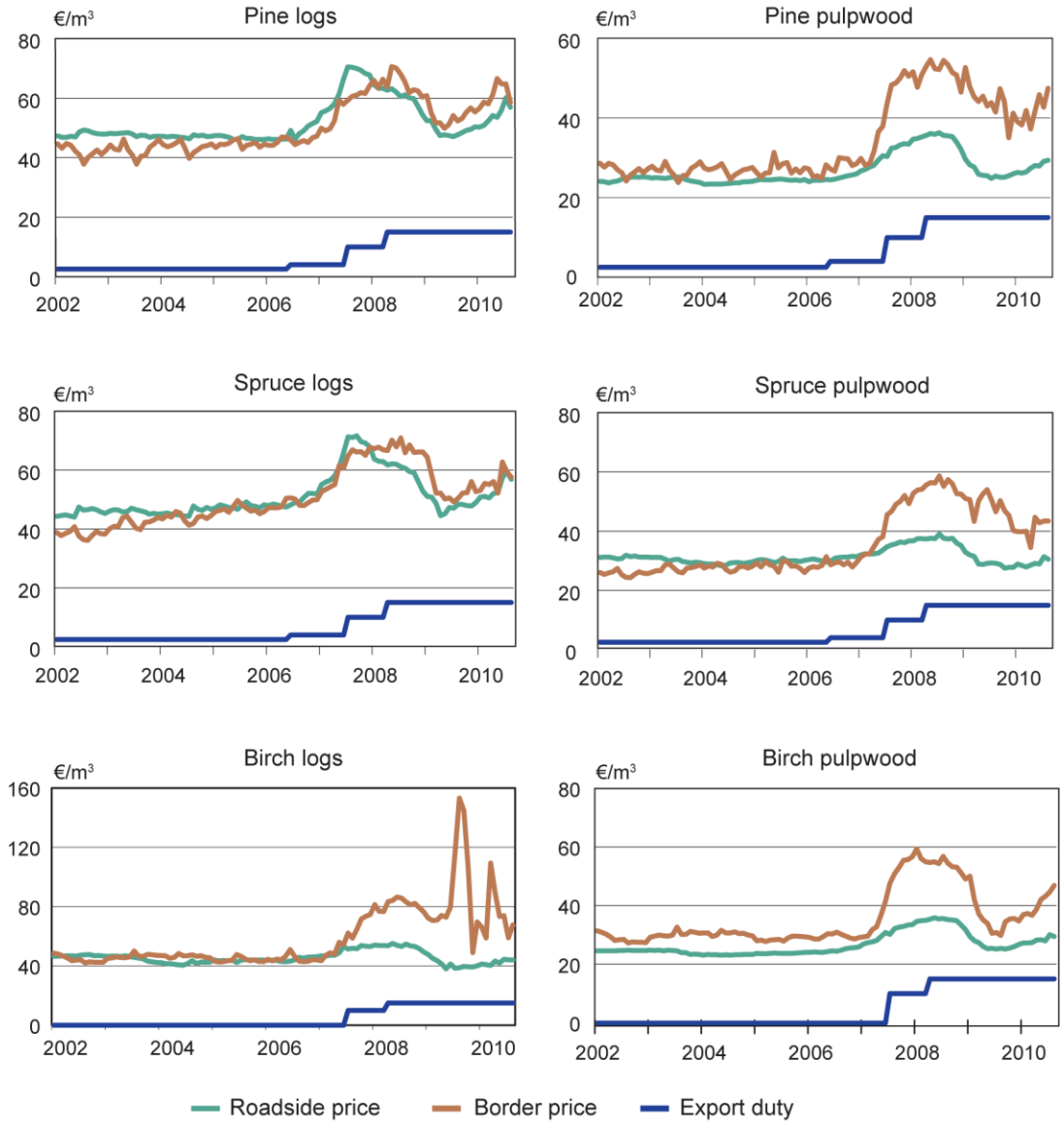

Figure 2.8 Domestic roadside prices and border prices of Russian roundwood in 2002:1–2010:8, €/m^3, (Metinfo, Finnish National Board of Customs).

[6] If the Finnish forest industry procured the import of the corresponding volumes of roundwood from domestic markets, according to the increased demand it would pay a higher price not only for these extra amounts, but also for the whole domestic wood procurement.

Previous studies have indicated that Russian birch pulpwood has complemented rather than replaced the domestic birch pulpwood supply. Moreover, according to recently estimated own price elasticities, the demand for imported Russian birch pulpwood has reacted to the changes in import price as theory suggests during the 2000s. Thus, the rise in the price of Russian birch pulpwood has decreased the demand for birch pulpwood imports as well as for domestic birch pulpwood. As for the demand for domestic birch pulpwood, the effect on own price has been close to zero or even positive. One interpretation is that imported Russian birch pulpwood has constituted the basis of birch pulpwood procurement and domestic birch pulpwood has then been purchased to uphold the set pulp production levels. In such a framework, the price of domestic birch pulpwood has been of minor importance compared with the volumes purchased to meet the requirements of pulp and paper production.

Recent results indicate, however, that the complementary relationship between Finnish and imported Russian birch pulpwood weakened during the late 2000s. This may reflect the fact that towards the end of the 2000s, the use of birch pulpwood by the Finnish forest industry decreased drastically as total pulp production capacity was cut down and some of the remaining pulp mills were converted to use pine instead of birch. Thus, it was no longer compulsory to import Russian birch pulpwood in order to uphold the set production levels.

As for birch and spruce sawlogs, studies indicate that Finnish and Russian sawlogs have been substitutes in the Finnish woodworking industry. Thus, the rise in the price of sawlogs of Russian origin has increased domestic wood procurement and vice versa. Theoretically, if trade occurs with close substitutes in the presence of competitive, open markets, the prices of the substitutes should be – net of transport costs – even. The close co-movement of Finnish and Russian prices is obvious, especially in the case of spruce sawlogs.

The inauguration of the customs tariff programme is detectable in statistical models. Recent studies have shown that the estimation of results up to 2007 are different from those after 2007. In general, the statistical performance of the interaction between the Finnish pulpwood market and imported pulpwood is stronger after 2007, while in the case of logs the interpretation is the opposite. The correlation between domestic roadside pulpwood prices and imported pulpwood volumes together with import prices are higher after 2007, implying that domestic and imported coniferous pulpwood are substitutes rather than complements in production. According to demand models, however, changes in domestic prices and in the prices of final products (sawnwood and pulp) have had more important effects on domestic roundwood demand and commercial fellings than have the changes in roundwood imports.

As always, one should be cautious when interpreting the results from empirical, econometric models. The case of Russian roundwood imports on the Finnish roundwood market is especially challenging because of several, sudden institutional changes that can be characterised as shocks and that have induced fluctuations in import volumes as well as in prices. Moreover, the Finnish statistics on external roundwood trade are limited in their time horizon. Thus, the empirical and statistical performances of the models have usually been weak. Some of the fluctuations in domestic roundwood markets and imported roundwood volumes can also be traced back to institutional rigidities and market behaviour. The behaviour of domestic pulpwood markets, which does not seem to react to imported volumes or import prices, was restricted at the beginning of the 2000s by a cartel dominated by the main buyers. Thus, price behaviour did not react according to normal market mechanisms or changes in the market environment such as imported roundwood volumes or prices. By contrast, the results depend on Russian pricing policy, which may still differ from a traditional market economy.

One explanation for the weak empirical performance can be that the results mentioned above are based on the analyses of the short run behaviour of the markets. In the long-term, the forest sector models could show the clearer effects of Russian roundwood on Finnish roundwood markets. If roundwood imports from Russia slowed, domestic roundwood prices would rise and this would lead to capacity reductions in Finnish sawnwood and paper production. Recent capacity reductions in Finnish forest industry are related, however, only partly to the recent drop in Russian roundwood imports because of the rise in export tariffs. Another important factor has been the economic recession and the consequent lack of demand in the traditional export markets of the Finnish forest industry.

2.3 Sawnwood Exports from Russia

2.3.1 Sawnwood - Number One Generator of Export Earnings from Russian Forest Product Exports

Sawnwood exports from Russia have fluctuated over the past two decades. The recent development pattern has been a steep upward trend, which has resulted in Russia regaining and strengthening its position in international sawnwood markets. This has inevitably increased competition, especially in the main market areas in Europe, Asia and Northern Africa.

Until 1990, the USSR was by far the largest producer of coniferous sawnwood[7] in the world. Its reported annual sawnwood production of over 90 million m^3 was comparable to the combined sawnwood production of the second and third largest producers, the US and Canada. The USSR was also a significant actor in international sawnwood markets. In the late 1980s, the USSR was after Canada the second largest exporter of sawnwood in the world. However, its annual sawnwood exports of about 8 million m^3 were only a fraction of the total volume of sawnwood production. Thus, the majority, over 90%, of sawnwood produced was consumed within the USSR.

The drastic decline in sawnwood production began in 1991, the last year the USSR existed. Official figures suggest that the drop in sawnwood production from 1990 to 1991 was nearly 30%. After the dissolution of the USSR, over 90% of the sawmilling capacity was located in the areas of the newly independent Russian Federation. The decline in sawnwood production continued along with the turmoil of the Russian economy until the late 1990s (Figure 2.9). Although the bottom of the decline was reached in 1998, the year of the "rouble crisis", the recovery of sawnwood production volumes was remarkably slow and the declining trend re-emerged in 2007 along with the worldwide recession. However, one should be cautious when interpreting official production figures, which do not systematically include small-scale local production. Moreover, in the Soviet era the incentive was rather to overestimate than to underestimate production levels, whereas nowadays the case may be the opposite with apparent shortcomings in the transparency of business activities.

[7] Hereafter, the term sawnwood refers to coniferous sawnwood (including planed) only. If not reported otherwise, non-coniferous sawnwood is excluded from the analysis. In 1989, the production of non-coniferous sawnwood was 13 million m^3 in the USSR. In 2009, the production of non-coniferous sawnwood was 1.9 million m^3 in the Russian Federation.

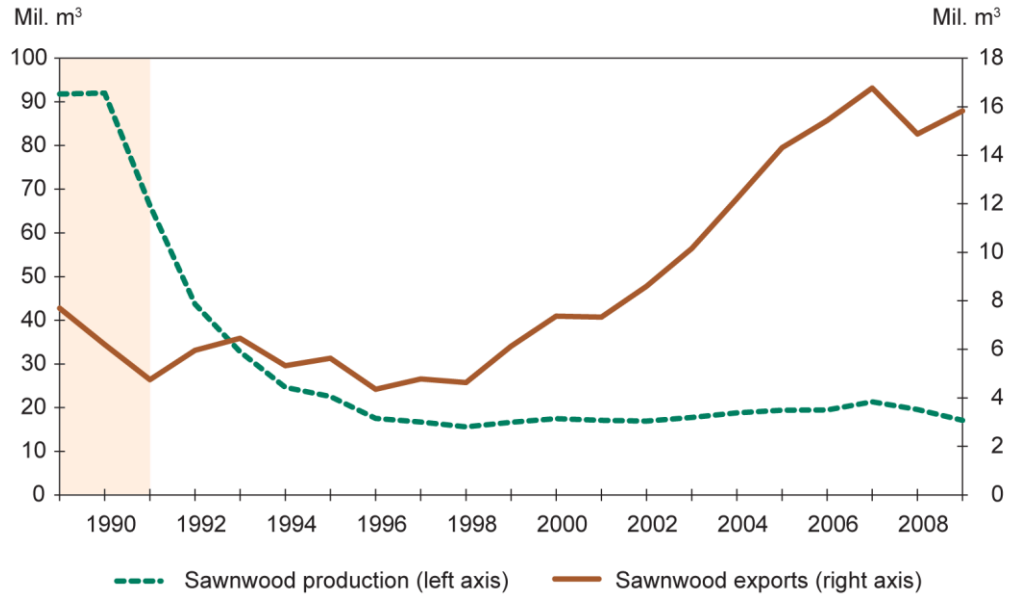

Figure 2.9 Production and export of Russian sawnwood. Years 1989–1991 the USSR, years 1992–2009 the Russian Federation (Faostat).

Compared with declining production figures, the exports of sawnwood from Russia remained steady during the early years of economic transition. The financial crisis of 1998 and the drastic devaluation of the Russian rouble against the US dollar by 70% improved the price competitiveness of Russian export industries considerably. In sawmilling, export orientation strengthened rapidly and in the decade following the financial crisis, export volumes for sawnwood grew 2.5 times. According to official statistics, over 90% of sawnwood production was exported in 2009.

Although the spurt in sawnwood export volumes coincides with the devaluation of the Russian rouble, improved price competitiveness because of exchange rate changes benefited the Russian sawmilling industry only temporarily. The gradual stabilisation of the Russian economy and the whole society lowered the country's risk and eventually promoted investment into the Russian forest sector. For foreign investors, sawmilling and other branches of the wood products industry were seen as a starting point to enter the Russian forest sector. By 2010, realised, publicly announced foreign investment had increased sawmilling capacity by at least 2 million m^3. Among the most active players have been Swedish (Swedwood, i.e. IKEA), Finnish (Botnia, Stora Enso, UPM) and Austrian (Mayr-Melnhof) forest industry companies, whose projects have predominantly been greenfield investment in the Northwestern federal district. As for the whole Russian Federation, it is difficult to estimate the exact figures for foreign investment in sawmilling as data from, for example, Chinese activities in the Russian Far East are virtually non-existent.

However, the most active investors in sawmilling have doubtless been Russian companies. Although many notable greenfield sawmilling projects (e.g. by the Russian Timber Group and Ilim Group) have been announced and executed, the majority of Russian investment has been allocated to modernising and enlarging the capacity of existing production plants. This has – at least locally – improved the technical efficiency and productivity of the Russian sawmilling industry. The competitiveness of Russian sawnwood in international markets has remained, although the advantage of favourable exchange rates is long gone. However, the overall

technical level of the Russian sawmilling industry is still regarded as low with gang saws constituting the prevailing machinery.

The increase in sawnwood exports from Russia has occurred without any direct support from the state. On the contrary, from 1999 to 2007, there were export duties on coniferous sawnwood ranging from 2.5% to 10% depending on the regime in place at the time. Although the primary motive of sawnwood export duties may have been a fiscal one, they also reflected the political view that it was not in the national interest to export low value added products, such as sawnwood. For example, the export duties for plywood and products from the pulp and paper industry were mainly abolished by 2003. Furthermore, in the recent draft of the forest sector strategy by the Ministry of Economic Development, the focus is on developing and expanding the pulp and paper industry by creating vertically integrated complexes. Sawmilling is clearly inferior to the production of pulp and paper, according to the last semi-official strategy paper. However, in this strategy, it is still envisioned that because of increasing investment the production of sawnwood will grow by nearly 2.5 times and the exports of sawnwood by 1.5 times by 2020.

Along with increasing export volumes, the importance of sawnwood as a generator of export earnings has been emphasised. In 2009, one-third of the total value of Russian forest sector exports was from sawnwood (Figure 2.10). During 2010, sawnwood's share of forest sector exports continued to grow. Figures from January 2010 to June 2010 show that the share of sawnwood is over 40%. Thus, it is currently the most important export item of the Russian forest sector. This development is partly a consequence of the increased roundwood export duties that have effectively slowed the mushrooming roundwood trade. In accordance with political will, the proportion of roundwood of total forest sector exports has decreased rapidly since the first (min. 10 €/m^3) and second (min. 15 €/m^3) step customs duties came into force in 2007 and 2008. However, the decreasing importance of roundwood exports and the consequent strengthening of the relative value shares of the other forest sector products explain the discernible development only partially. In parallel with these rising export volumes, the unit value of sawnwood exports has also risen. Subsequently, the total nominal value (in USD) of sawnwood exports multiplied 3.6 times from 1998 to 2009. The value growth of sawnwood exports has in fact been the fastest of all forest products.

With the current export volume of about 15 million m^3, Russia is the second largest exporter of sawnwood in the world. The largest is Canada with 19–24 million m^3 annually. During recent years, the most important – ranked by value of exports – export destinations of Russian sawnwood have been EU countries (Figure 2.11). Within the EU, the largest single trade partners have been Germany, the UK and France. The export share of the CIS countries is also remarkable, which reflects the traditional channels of sawnwood trade within the area of the former USSR. However, as for single export partners the largest are Egypt, China and Japan. Countries in the Middle East, especially Iran, are also of great importance. For example, in 2008 the value of sawnwood exports to Iran equalled that to Germany.

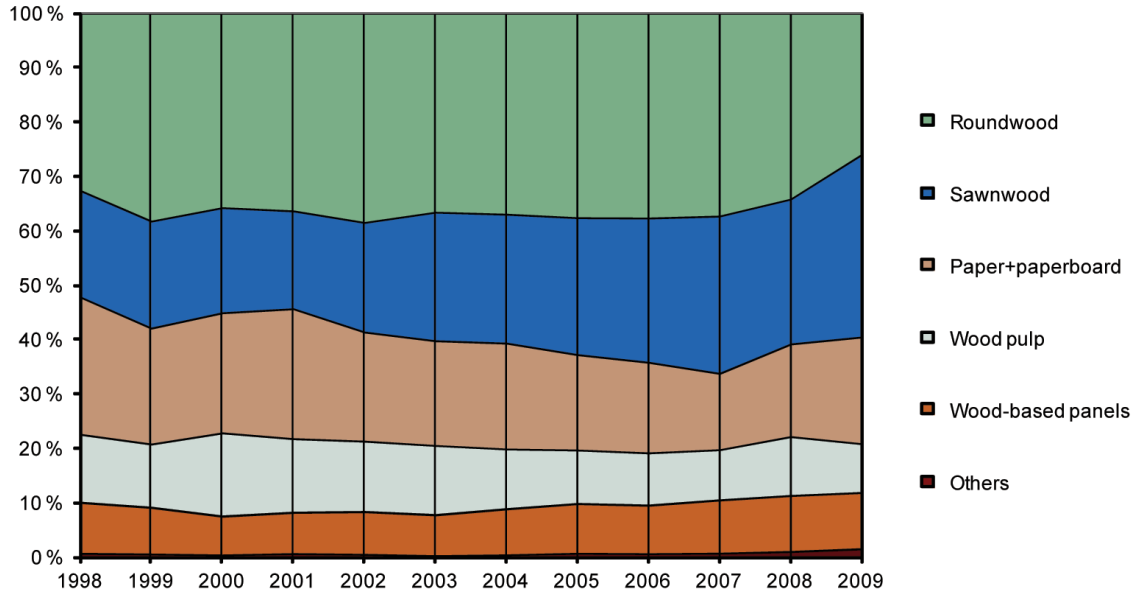

Figure 2.10 The value distribution of Russian forest sector exports by product. In the picture, sawnwood exports consist both of coniferous (97.3%) and non-coniferous (2.7%) sawnwood (Faostat).

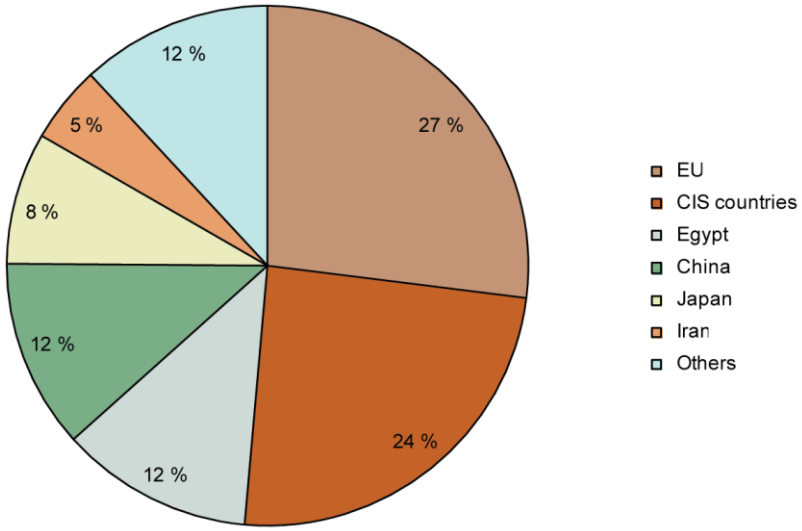

Figure 2.11 The distribution of Russian sawnwood exports by trade partners in 2008 (proportions of total export value) (Faostat).

The distribution of Russian roundwood exports by volume is slightly different. The largest share of exports by volume belongs to the group 'others' (Figure 2.12). This residual group contains all the countries not included in the other groups as well as a large adjustment because of the discrepancy between the total export figure and country-specific figures. As for the value shares depicted in Figure 2.11, the discrepancy between the total and cumulative country figures is insignificant. By volume, the export shares of Egypt, Japan and the CIS countries are considerably smaller than the respective value shares are. This indicates that the unit value of sawnwood exports to these countries has been considerably higher than average. The higher unit value is also indicative of higher quality. Traditionally, Russian sawnwood has been regarded as a low grade bulk product for structural use in construction. It seems that this may still be the

case in European and Chinese markets. However, in North African and Middle Eastern markets, the willingness to pay for Russian sawnwood has increased rapidly since 2006. According to official statistics, in 2008 the average unit value of Russian sawnwood exports was 185 $/m^3, whereas the unit value of exports to Egypt was 361 $/m^3, to Japan 320 $/m^3, to the CIS countries 245 $/m^3, to EU 218 $/m^3 and to China 172 $/m^3.

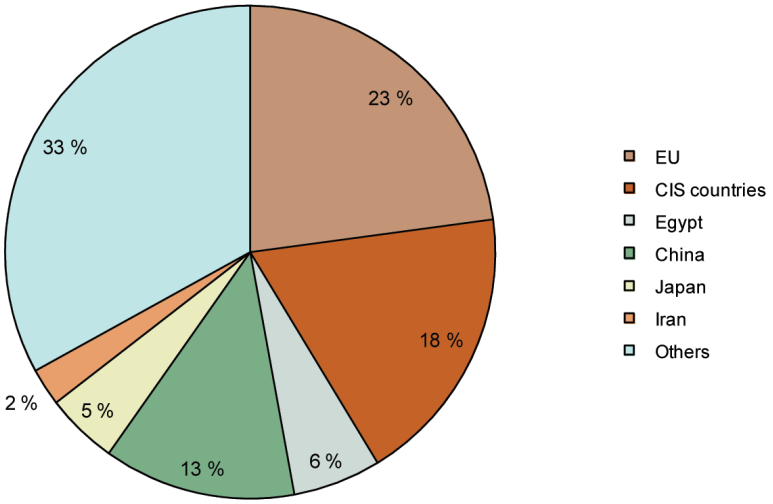

Figure 2.12 The distribution of Russian sawnwood exports by trade partners in 2008 (proportions of total export volume) (Faostat).

2.3.2 Development in European Sawnwood Markets

From the standpoint of Finnish – and more widely Scandinavian – producers of sawnwood, exports of Russian sawnwood to European markets are of special interest. Although Northern Africa has become an increasingly attractive and lucrative market over the past couple of years, Europe and especially Western Europe (UN classification, including the British Isles) remains the main destination for Finnish, as well as Swedish, sawnwood exports. In 2009, the EU's share of Finnish sawnwood exports was about 45% and the countries of Western Europe about 40%.

Recently, European sawnwood markets have been characterised by the oversupply of sawnwood. During the past decade, the production of sawnwood has increased, especially in the central parts of Europe, most rapidly in Germany and the Czech Republic. Thus, the area that previously was a net importer has become a net exporter of sawnwood. This has inevitably tightened competition in the sawnwood markets in many countries. In 2009, the largest European export destination of sawnwood was Germany (5.1 million m^3 of coniferous sawnwood) followed closely by the UK (4.8 million m^3). In the German market, Russian producers of sawnwood were able to grow their market share until 2007 (Figure 2.13). In fact, the market share of sawnwood originating from Russia was the highest of all other countries of origin in 2007. Simultaneously with the strengthening of the position of Russian sawnwood, Finnish sawnwood has lost its position as market leader in sawnwood exports to Germany. In turn, Swedish producers of sawnwood have been able to winwon back their position during the past couple of years. This development was triggered by the devaluation of the Swedish krona against the euro in 2008, when the market share of Swedish sawnwood exceeded the market share of Russian sawnwood. The expanded sawnwood production in the Czech Republic is also

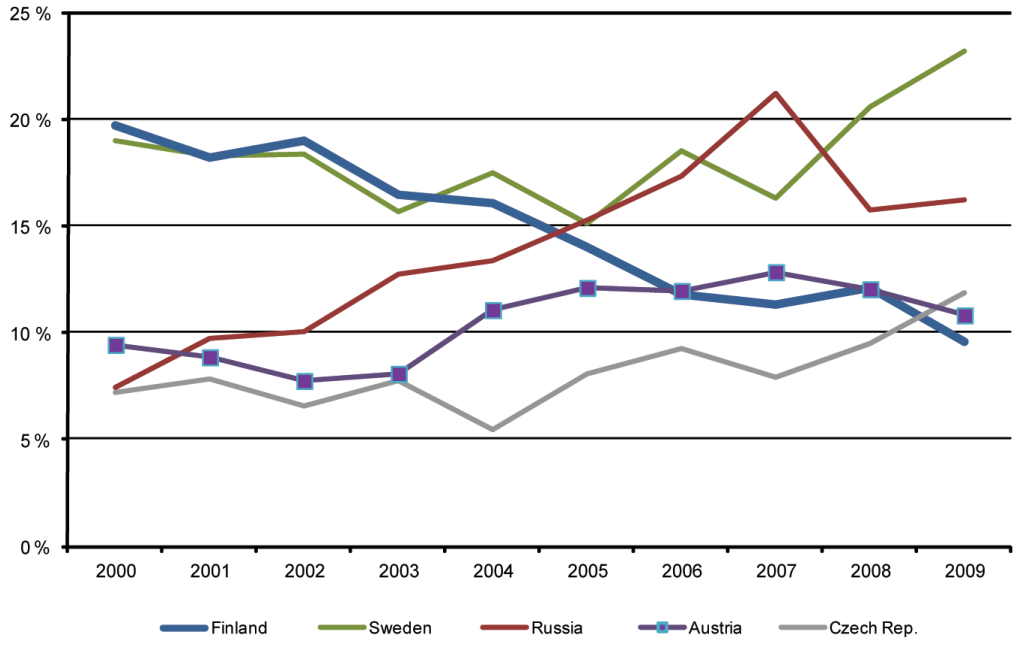

Figure 2.13 Market shares (proportions of the total value of sawnwood exports to Germany) of the largest exporting countries in the German sawnwood market 2000–2009 (Eurostat).

visible in German markets: since 2004, the market share of Czech sawnwood has doubled and it currently is larger than the market share of Finnish sawnwood.

In the UK, the construction industry was heavily affected by the late-2000s recession. Consequently, sawnwood export volumes to the UK dropped by 40% from 2007 to 2009 and the UK lost its position as the most important destination of sawnwood exports in Europe. Sawnwood exports to the UK have traditionally been dominated by sawnwood originating from Sweden. The dominance of Swedish sawnwood even increased during the recession mainly because of the favourable prices of storm-felled sawlogs and the devaluation of the krona, which improved the price competitiveness of the Swedish sawmilling industry. In 2009, over 50% of sawnwood exports into the UK originated from Sweden (Figure 2.14).

The market shares of Finnish and Latvian sawnwood, which until the mid-2000s were nearly equal, have recently showed declining trends in sawnwood exports to the UK (Figure 2.14). The trend of Latvian sawnwood has been steeper than that of Finnish sawnwood. However, the market share of Latvian sawnwood seemed to have stabilised in 2009, whereas the market share of Finnish sawnwood has continued to decrease to below 15%. The market share of Russian sawnwood showed a slight upward trend until 2006. The recession has also affected Russian sawnwood exports to the UK as the market share of Russian roundwood nearly halved from 9% in 2006 to 5% in 2009.

Sawnwood exports from Germany to the UK grew by over 10 times from the marginal figures of 2000 to 2007. Although the market share of German sawnwood turned slightly downwards after 2007, its share is still comparable with the market share of Russian sawnwood. The expansion of sawnwood production in Germany and the consequent need to find new markets for surplus production are evident in German sawnwood exports to the UK.

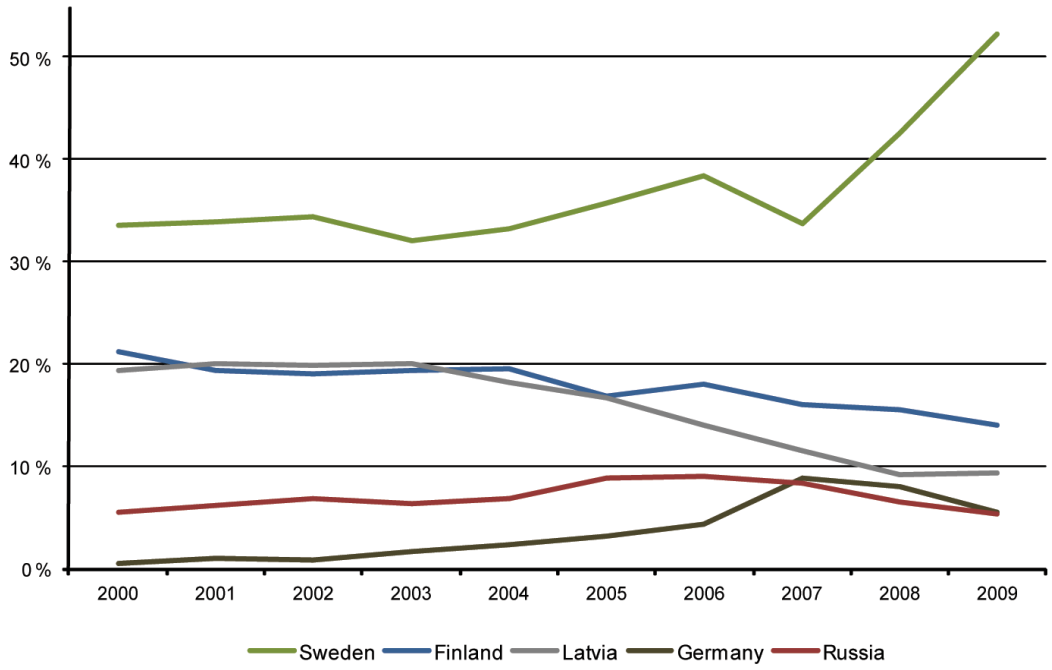

Figure 2.14 Market shares (proportions of the total value of sawnwood exports to the UK) of the largest exporting countries in the UK sawnwood market 2000–2009 (Eurostat).

The effect of the increased sawmilling capacity in Germany is most evident in the French sawnwood market. The share of German sawnwood exports to France increased steadily during the 2000s except 2009 (Figure 2.15). In 2009, the market share of German sawnwood decreased by 2.5 percentage points, whereas the market share of Swedish sawnwood increased by 1.5 percentage points. The market share of Russian sawnwood also increased slightly in 2009, about 0.5 percentage points. In the French market, Finnish sawnwood has experienced the same fate as in the German and British sawnwood markets. The market share of Finnish producers in sawnwood exports to France decreased throughout the 2000s. In fact, the share of the former market leader nearly halved from 2000 to 2009. In parallel with the falling market share of Finnish sawnwood, the market share of German sawnwood strengthened considerably and currently Germany is the clear market leader in sawnwood exports to France.

The sawnwood export markets of Europe are regarded as highly competitive and the level of competition has obviously increased because of the expansion of sawnwood production in many European countries. In the three abovementioned market areas, the development of the market shares of the most substantial countries of origin show some common trends, yet differences are also discernible. It seems that until about 2002, the development of market shares was steady in all three market areas. Since then, the market share of Finnish sawnwood began to decline, especially in Germany and France, whereas the market share of Russian sawnwood increased rapidly, especially in Germany. The market share of Swedish sawnwood has recovered in all three market areas since 2007, i.e. during the recession. Since 2002, German sawnwood has won market share both in France and in the UK, where German sawnwood was previously a marginal item.

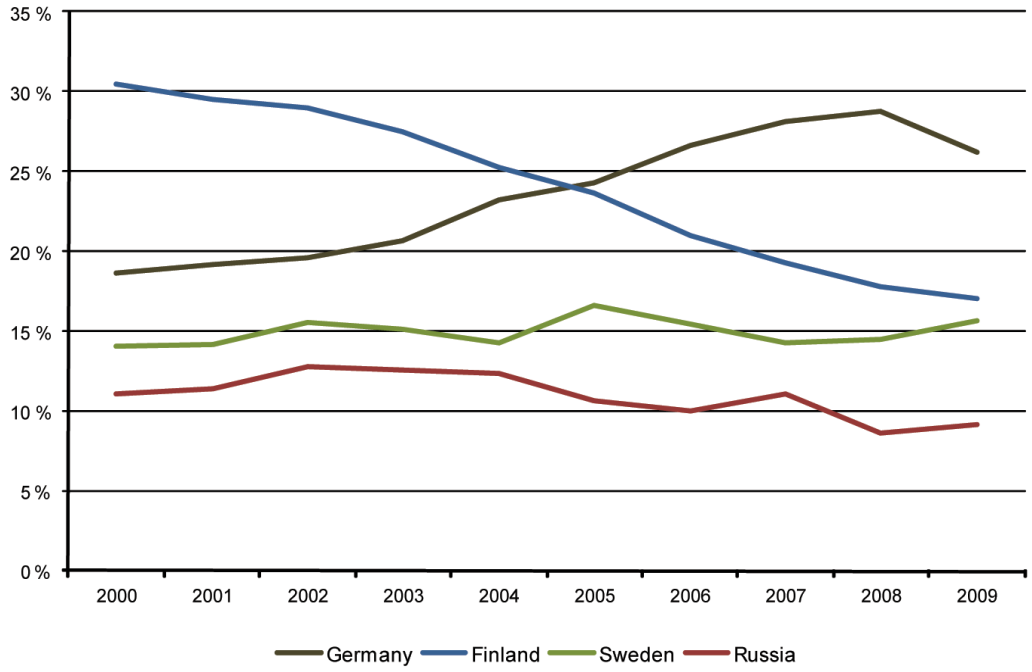

Figure 2.15 Market shares (proportions of the total value of sawnwood exports to France) of the largest exporting countries in the French sawnwood market 2000–2009 (Eurostat).

Common to Finland and Germany is that they both belong to the euro zone and, therefore, the opportunities for sawnwood producers to gain an advantage or have disadvantage from exchange rate changes are nonexistent (within the euro zone) or equal (outside the euro zone). The producers of sawnwood in Sweden and Russia, in turn, clearly can take advantage of favourable exchange rate changes. Figure 2.16 depicts the development of the real price competitiveness of Russia and Sweden against the euro zone. The real price competitiveness index takes into account the fluctuations of currency exchange rates as well as differences in country-specific inflation rates. By comparison, the real price competitiveness indices of Finland and Germany would be straight lines (at an index value of 100) because both countries belong to the euro and inflation rates in both countries have been nearly equal (corresponding to the average inflation rate within the euro zone).

After steep devaluation in 1998, the exchange rate for the Russian rouble stabilised quickly. In fact, some revaluation of the rouble against the euro occurred in the early 2000s. Obviously, this devaluation promoted the price competitiveness of Russian export industries. However, the stabilisation of the exchange rate combined with double-digit annual inflation rates led to the inevitable deterioration of the real price competitiveness of Russian industries, especially after the mid-2000s (Figure 2.16). Although Figure 2.16 illustrates the development of the general index, not that of the sawmilling industry, and also taking into account the possibility that the deteriorating of the real price index could have been partly compensated by the faster than the average improvement in productivity, Russian sawmilling industry's competitiveness has most certainly weakened against, for example, the sawnwood production in Sweden and in the euro zone. This development is identifiable in the decreasing market shares of Russian sawnwood in Western European markets. Instead, Russia has recently increased sawnwood exports to China to replace the sawlogs the Chinese previously imported from Russia. China's importance in

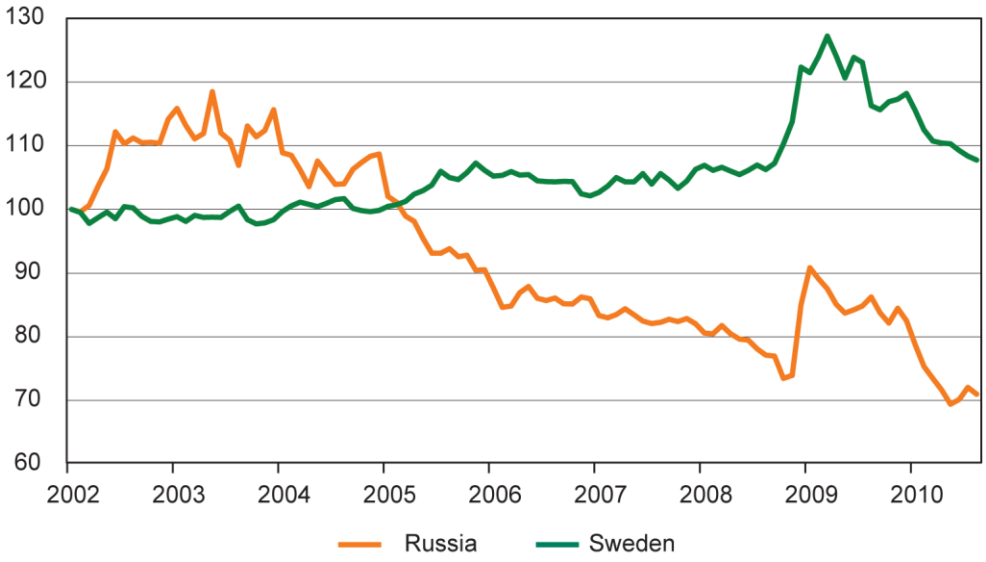

Figure 2.16 Real price competitiveness of Russia and Sweden against the euro zone, 2002:1–2010:8. January 2002 is used as the basic period of the indexation. The real price competitiveness index takes into account fluctuations in currency exchange rates and inflation rates.[8]

Russian exports may even surpass that of Western Europe. However, a large proportion of Russian exports is from Chinese sawmills that have moved to the Russian side of the border. As mentioned before, the improved real price competitiveness of Sweden explains the rapidly increased markets shares of Swedish sawnwood in 2008 and 2009.

2.4 Conclusion

The development of the Russian forest sector has been rather turbulent with respect to changes in business cycles, market environment or political and administrative decisions made by Russia. After the devaluation of the Russian rouble in 1998, the exports of forest sector products were forced to recover after the chaotic state inherited from the Soviet era. During the early 2000s, increasing roundwood exports delivered necessary export earnings, which promoted the development of the forest sector in Russia. Russia also increased its sawnwood exports. Despite tightening market competition in Europe because of large investments in new sawmill capacity during the 2000s, Russia was able to increase its market share, for example, in German sawnwood markets. The focus of small and medium-sized Russian enterprises was to increase their sawnwood and other wood industry exports to EU markets. However, the real price competitiveness of Russian forest sector products deteriorated for reasons beyond the industry's control (strong rouble and high annual inflation rates). In addition, the stepwise customs tariff programme for roundwood exports that aimed to promote foreign investment and the domestic forest industry was unsuccessful. The programme almost collapsed roundwood exports and the urgently needed investment from foreign actors has been only marginal.

[8] Real price competitiveness index = currency index (currency exchange rate, €/RUB, €/SEK, of a given moment against the basic period) * CPI_{ex} (consumer price index of exporting country) / CPI_{imp} (consumer price index of export destination).

After a drop in 2008, Russian sawnwood exports have risen sharply, which has resulted in Russia regaining and strengthening its position in international sawnwood markets. With recent annual exports of about 15 million m^3 of coniferous sawnwood, Russia is the second largest exporter of sawnwood in the world. However, this is somewhat misleading since at least some part of the rise has replaced the trade of sawlogs that China previously imported from Russia. Nevertheless, from a Finnish perspective this development means that Russia has become an important competitor in market areas where Finnish sawnwood has traditionally played an important role. According to the macroeconomic fundamentals, however, it is likely that the real price competitiveness of Russian sawnwood will decrease rather than increase in the near future. Owing to problems in financial markets, the euro is expected to remain weak with respect to the rouble and inflation will be higher in Russian than it is in the euro zone. Together with the problems of accessibility and increasing sawlog prices in Russia, these terms do not support Russian sawnwood exports to European markets. Instead, it is likely that Russian exporters will have to focus more on fulfilling China's increasing need for coniferous sawnwood for their large furniture industry and other final uses.

In November 2010, under the negotiations between the EU and Russian Federation, the consensus was that Russia would phase out partly its export tariffs for raw materials after becoming a member of the WTO. This is anticipated to occur during 2011. However, negotiations can be drawn out for several reasons and the final time schedule is highly uncertain. The technical details and time schedules concerning the phasing out of roundwood export tariffs also remain unknown.

Deregulating the customs tariff programme will certainly affect roundwood trade from Russia. To what extent this will happen is still uncertain. Although the economic growth in China requires raw materials, it is likely that at least the trade between Russia and China will recover. This will reflect on the roundwood trade flows not only in Asia but also in North America and Europe. Log imports into Germany may also increase to fill the rising need for sawlogs because of new sawmill capacity investment. For the Finnish forest industry, the deregulation of the programme means that Russian roundwood imports are likely to become again more profitable. At the least, the imports of birch pulpwood, as well as plywood logs of spruce and birch, will increase. To what extent the change in customs duties affects the imports of other assortments will depend on the accessibility and roundwood prices on the border. The majority of Russian forests constitute non-coniferous species, and it is difficult to increase the fellings of coniferous species in a cost efficient way. Furthermore, the willingness of Finnish forest companies to rebuild their procurement organisations in Russia and return some of the processing lines in Finland to consuming birch pulpwood rather than pine pulpwood is not known. In fact, the need for pulpwood after the capacity reductions in the paper industry has also decreased.

Even though the membership of the WTO would be a clear improvement for the Russian forest sector, it is not a sufficient condition for development. To reach the goals of the current strategic plan to increase domestic processing and the exports of more value added products Russia clearly should concentrate on improving its domestic business environment and infrastructure. This would attract more foreign investment into the Russian forest sector and ensure stable and adequate wood procurement. Recent research results also emphasise that policies that improve the investment climate are vital for Russian forest industry development compared with setting export tariffs. This can be stressed in the present situation, where rises in Russian export duties have decreased roundwood fellings and led to problems in wood procurement, at least in some areas. The drop in fellings from about 300 million m^3 at the beginning of the 1990s to about 150 million m^3 in 2009 will be difficult to replace in the near future.

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3 Log Quality and Grade Distributions of Sawnwood from Northwestern Russia and Finland

3.1 Introduction

The export of softwood logs from Russia to Finnish sawmills and plywood mills started to grow in the late 1990s and reached nearly 4 million m^3 in 2005. It then dropped rapidly after the rise of customs tariffs and along with the reduction in sawnwood and plywood production in Finland to one-quarter in 2008 (Viitanen & Karvinen 2010, see also Figure 2.5). However, the partial recovery of exports is expected to continue, especially along with the tariff relief to come. Finnish wood product industries, on one hand, needed new log sources to meet the growing log consumption in the 2000s and, on the other hand, wanted to prevent an excessive increase in the market price of domestic logs.

In Finland, large diameter and long (over 5.2 m) logs are sought through import, in particular, because their availability in Finland has decreased. This is because of the gradual changes in the structure of logging stands through the trend towards younger final-cutting age and the increasing supply of logs from forest thinnings providing smaller and generally lower quality logs. Land use restrictions have also affected the availability of old-growth forests because of nature conservation, biodiversity maintenance and reservations for landscaping and tourism particularly in northern and eastern Finland. These regions are, simultaneously, the most relevant in Finland for the import of roundwood from Russia in terms of transportation logistics.

Large and long logs are often needed to increase the average length of sawnwood to the level required in sales contracts and to enable extra long valuable sawnwood lots with high profitability for the sawmills. Plywood and LVL mills processing spruce have also needed large logs to compensate for the deficiencies in domestic supply. Generally, according to Finnish sawmillers, the quality of logs imported from Russia, especially from spruce, has met or even exceeded the level of domestic logs. However, negative exceptions have been encountered, which can be traced to the expertise or motivation of the supplier, management of transportation or storage, geographic origin or bucking of stems to proper wood assortments (Seliverstov 2008, Syunev *et al.* 2009). In parallel, the outtake percentage of logs is assumed to be usually only 30–70% in Russian final fellings compared with 80–95% in Finland (e.g. Wall et al. 2012).

The availability of high quality commercial grades of sawnwood is one of the key factors for the competitive ability of primary wood processing in Finland. It also directs the product segment strategy of sawmills to different markets, especially in the exports. In parallel, Finnish processing wood industries have occasionally suffered from a shortage of sawnwood that meets their standards, in particular during high demand periods. That is why joinery industries, manufacturers of building components and glulam timber and log house factories import sawn and planed timber to some extent from Russia. The quality of Russian wood products is occasionally suspected, the experiences being not only positive; however, the variation between individual traders is large (e.g. Verkasalo et al. 2007).

Objective information on the quality and specific characteristics of Russian logs or wood products can be obtained by database research or empirical sampling studies. Timber traders and forest industry companies generally use the first approach, but the data are not publicly available. In this chapter, the results of studies based on the second approach are summarised to make comparisons between Russian and Finnish raw materials and sawnwood from Scots pines

and Norway spruces from selected geographic regions. The aim was to find out how accurately it would be possible to predict the grade yield from either the outer features of the logs or the properties of sawnwood using binary or multinomial regression modelling and, in particular, whether any regional differences remained thereafter. The studies were an extension to the project on Russian forestry and wood quality from 2005–2007.

3.2 Study Materials and Methods

Sampling was designed and executed and empirical research data were gained through the measurements of logs, pieces of sawnwood and wood specimens in collaboration with Metla and VTT, The State Technical Research Centre (Combigrade project). The pine data consisted of 1,069 logs from three sawmills and their respective domestic wood procurement regions, Lappeenranta for south-eastern Finland, Merikarvia for western Finland, Kajaani for northern Finland and two regions in north-western Russia: Novgorod representing fertile growing conditions in the south and Vologda representing more continental, colder and tundra-like growing conditions. The spruce data consisted of 1,162 logs from the sawmills of Kitee for south-eastern Finland, Kyröskoski for western Finland and Kajaani for northern Finland. The geographic origin of spruce was similar to pine except for the Republic of Karelia (southern part) replacing Novgorod in Russia. The origin of log lots was known at the accuracy of marked stands for Finnish logs, but only the railway station where the logs had been loaded to the rail cars could be identified for Russian logs. The geographic location of the regions is shown in Figure 3.1.

Figure 3.1 Sampling regions in Finland and Russia, W-F representing western Finland, N-F for northern Finland and S-E F for south-eastern Finland (Hautamäki et al. 2010).

The regional sub-samples were further divided evenly into five diameter classes, each representing one centre yield dimension of sawnwood, ranging from 38 mm × 100 mm to 63 mm × 200 mm. Logs were measured and cut to lengths of 4.5 m after sawing disc specimens

from both ends. The mean widths of annual rings, the proportion of latewood in the ring width and the proportion of heartwood were measured from the discs in the laboratory using a binocular microscope equipped with a video camera and a sliding table to which the disc was attached. Logs were measured for several wood characteristics and graded according to external quality. They were then sawn to the desired dimensions and kiln-dried to a 16–22% moisture content (dry weight basis).

The parallel centre yield pieces from either side of the pith were sampled, the first ones to study appearance and the second ones structure. The relevant external characteristics for wood product quality were measured for each piece. The appearance product samples were graded manually, for visual grading according to the Nordic Timber grading (NT rules) and for visual strength grading according to the Finnish structural grading (T rules, an application of the Nordic INSTA 142). The structural product samples were tested destructively for the modulus of elasticity (MOE) and bending strength (MOR) according to the EN 408 standard, after cutting them into 2 m test specimens and measuring the air-dry density (ρ_{12}) of each piece and the moisture content from their end specimens. Pieces were also classified theoretically according to structural strength grades (C rules, EN 338 standard), based on the specified criteria and the measured values of ρ_{12}, MOE and MOR.

3.3 Results and Discussion

3.3.1 Log Properties and Distributions

For Scots pine, the diameters of the largest sound and dry or rotten knots were larger in Novgorod compared with the other regions (Table 3.1). The sizes of the largest knots were rather homogeneous in the other regions, except for northern Finland where the dry knot was smaller. The annual rings were, on average, wider in Russia compared with Finland, and they were narrower in northern Finland compared with other regions. In addition, the proportion of latewood was the largest in northern Finland and lowest in Novgorod, but there were no differences between western Finland and Vologda. The diameters of the largest sound and dry or rotten knots were larger in Novgorod compared with the other regions. Overall, based on external evaluation, high quality butt logs were the most common in south-eastern Finland and western Finland and the least common in Novgorod. Butt logs covered 63–76% of the data in Finland and 86–92% in Russia (Figure 3.2).

For Norway spruce, the largest sound knot was larger in western Finland compared with Vologda and south-eastern Finland (Table 3.1). The dry or rotten knot was smaller in northern Finland compared with other regions, and in south-eastern Finland it was smaller than in Russia. The annual rings were narrower in northern Finland and Vologda in comparison with the other regions and the widest in south-eastern Finland. Furthermore, the latewood proportion was the largest in south-eastern Finland and smallest in Vologda. By contrast, the proportion of heartwood was smaller in south-eastern Finland compared with other regions and smaller in western Finland compared with Russia.

Table 3.1. Means of commercially important log properties for Scots pine and Norway spruce by region (Hautamäki et al. 2010).

Property	South-eastern Finland	Western Finland	Northern Finland	Novgorod	Vologda
Scots pine:					
Mean diameter of the largest sound knot, mm	37.3	42.3	41.9	48.4	41.7
Percentage of logs with sound knots	28.1	23.1	20.3	21.2	9.7
Mean diameter of the largest dry knot, mm	28.4	27.2	25.7	35.8	31.1
Percentage of logs with dry knots	62.9	71.4	81.1	87.6	78.3
Annual ring width, mm	1.69	1.63	1.41	1.87	1.92
Latewood percentage	30.3	26.0	37.0	24.8	27.3
Heartwood percentage	59.8	64.9	61.4	70.4	67.7
Norway spruce:					
Mean diameter of the largest sound knot, mm	25.5	30.3	27.8	28.1	26.1
Percentage of logs with sound knots	79.0	80.2	86.0	57.2	49.0
Mean diameter of the largest dry knot, mm	17.2	18.5	14.6	19.2	20.4
Percentage of logs with dry knots	90	98	98.1	97.8	97.6
Annual ring width, mm	2.3	2.05	1.45	1.78	1.49
Latewood percentage	2.94	2.6	2.42	2.36	2.23
Heartwood percentage	66.2	68.2	69.2	70.7	72.2

Overall, high quality butt logs were the most common in the Republic of Karelia and the least common in south-eastern Finland. However, the percentage of high quality butt logs was the largest in south-eastern Finland and the smallest in northern Finland. Butt logs covered 41–61% by region, the percentage being the largest in northern Finland and the Republic of Karelia, and the smallest in south-eastern Finland. Of the upper logs, normal quality logs covered 84–89% in Finland and 80% in Russia (Figure 3.2).

3.3.2 Sawnwood Characteristics and Grade Distributions

There were significant differences in several sawnwood properties by region. The grade yields from the Novgorod and Vologda regions were lower than they were in Finland as a whole. For spruce, the between-region differences in log and sawnwood properties were much smaller than they were for pine.

Of the important sawnwood properties of *Scots pine*, the largest sound knot was, on average, thicker in diameter in all Russian regions compared with Finnish regions. Otherwise, the dry knot was smaller in western and south-eastern Finland compared with other regions. In sawn from butt logs, the largest dry knot was thicker in diameter in Novgorod, Vologda and northern Finland in comparison with western and south-eastern Finland. The mean number of sound knots per metre was larger in Novgorod compared with other regions. The number of dry knots was larger in northern Finland compared with other regions, and in western and south-eastern Finland compared with Novgorod and Vologda.

In the important sawnwood properties of *Norway spruce*, there were no differences in the diameters of the largest knots on the outer faces between regions. However, the number of sound knots per metre was larger in south-eastern Finland and smaller in the Vologda region compared with other regions. There appeared more dry knots per metre in sawn pieces from northern Finland and less in sawn pieces from south-eastern Finland in comparison with Vologda. However, there were more knots smaller than 5 mm in sawn pieces from Vologda compared with other regions. Resin pockets were more common in sawn pieces from northern Finland compared with other regions.

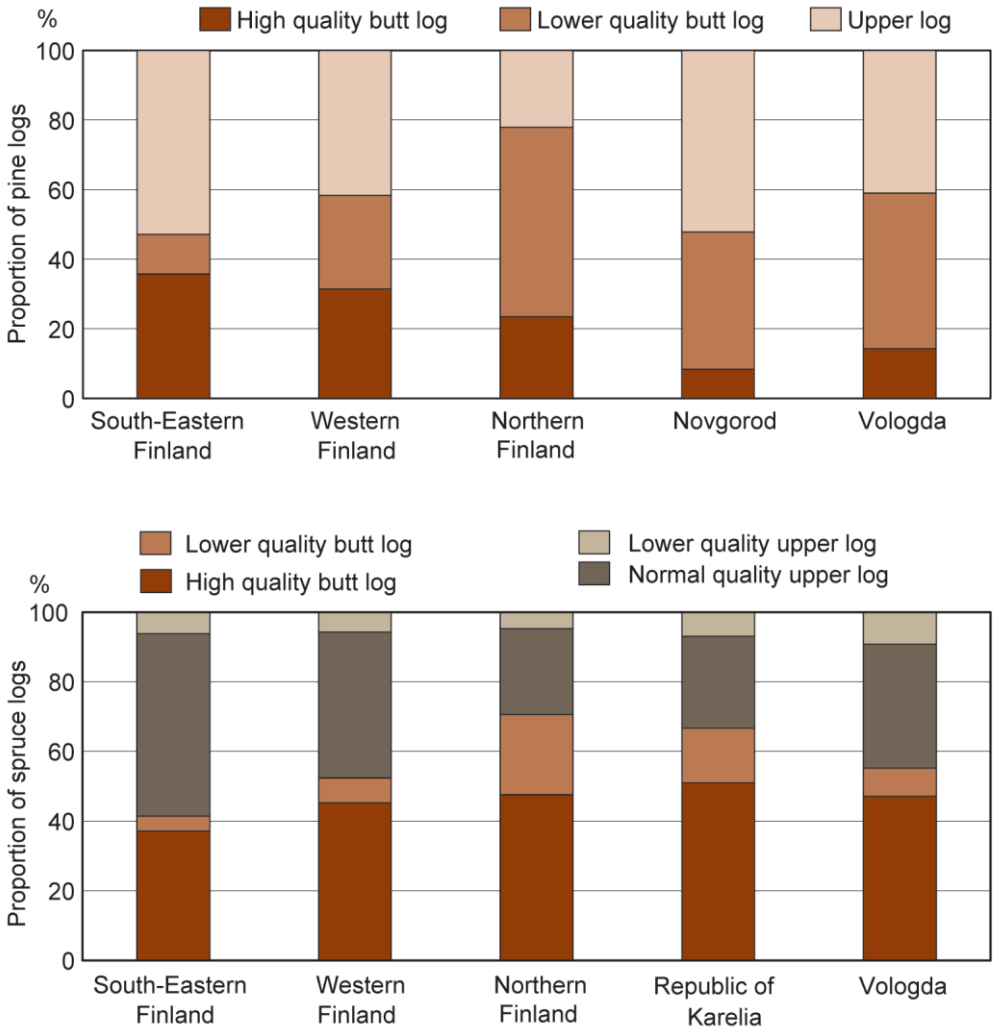

Figure 3.2 Log grade distributions of Scots pine (above) and Norway spruce (below) by region.

The observed NT and T grade distributions of sawnwood are presented by region in Figure 3.3 for Scots pine and in Figure 3.4 for Norway spruce. The distributions were typically wider for pine than they were for spruce, in parallel with the larger variation in wood and timber properties. Furthermore, the best grades, but also the worst grades, were more common for pine than they were for spruce, especially in NT grading.

For Scots pine, the best grade was notably more common in western and south-eastern Finland and notably more uncommon in the Russian regions, both for NT grading and T grading. Regional differences were generally the reverse in the proportions of the worst grades. However, the worst grade was more common in NT grading in northern Finland and Vologda and less common in south-eastern Finland and Novgorod.

For *Norway spruce*, grade B was the dominant NT grade in all regions, the proportion being the largest in western Finland and the lowest in south-eastern Finland. However, grade A was also the most common in south-eastern Finland, in addition to Vologda, whereas its proportion was low in western Finland, in addition to the Republic of Karelia. The proportion of grade D was very low in northern Finland. In T grading, the best grade was the most common in Vologda and northern Finland and the least common in south-eastern Finland. The worst grade was the most common in the Republic of Karelia and the least common in northern and western Finland.

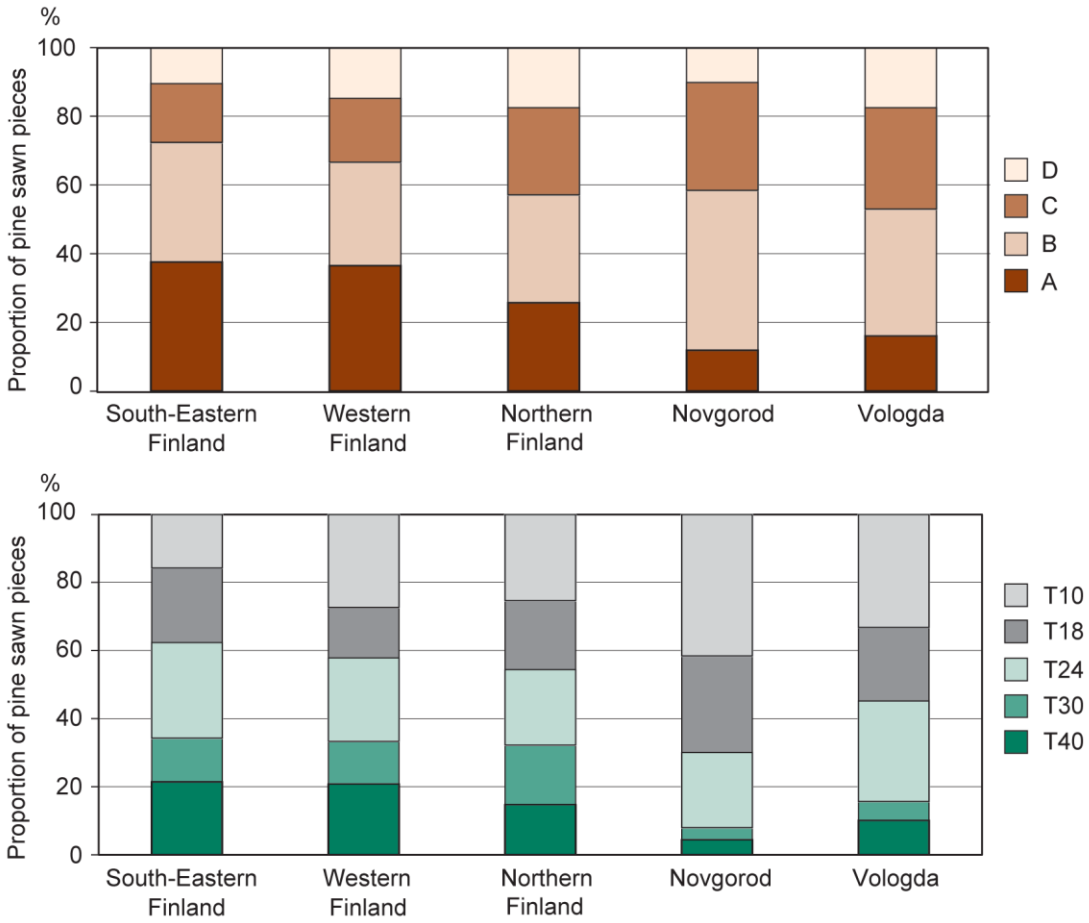

Figure 3.3 Observed appearance quality distributions (NT grading, above), and visual strength grade distributions (T grading, below) for Scots pine by region (Hautamäki et al. 2010).

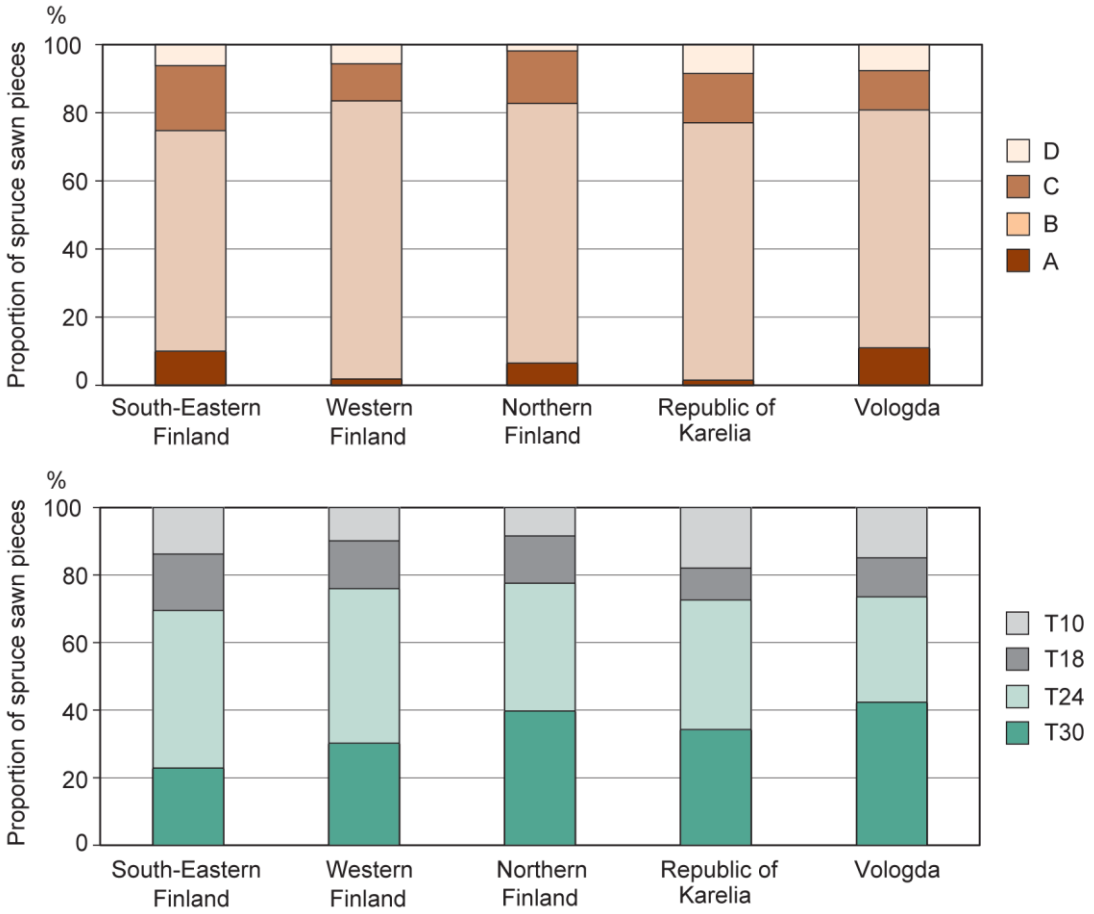

Figure 3.4 Observed appearance quality distributions (NT grading, above), and visual strength grade distributions (T grading, below) for Norway spruce by region (Hautamäki et al. 2010).

The geographic differences in the timber quality observed between regions could be largely traced to the different growing conditions (length of annual growing period and fertility of forest sites). However, forestry practices also affect timber quality and, therefore, the yields in grading. Silvicultural thinnings did not obviously belong to the forest management history in Russian sampling regions. Log bucking was not probably optimised for length and quality in Russia, and logs of the highest quality may even have been creamed for domestic use prior to delivery to Finnish mills.

It is notable that differences in the quality of wood materials and wood products are partly reverse and more complicated than they are in logs. Russian logs are typically extracted from old trees that have no history of aimed silviculture. Such trees hide in their core both the positive characteristics such as narrow ring width and high heartwood percentage and the negative characteristics such as dead knots and internal checks.

In fertile growing conditions, such as in Novgorod, Scots pine commonly develops logs and sawnwood with large knots and wider annual rings compared with colder regions and slower growth. Logs from the Vologda region produced better strength grade yield in sawnwood than did those from the Novgorod region, but worse than did those from Finland. Sawnwood from the Russian regions suffered from large and frequent knots. In Finland, pine sawnwood from the north had, unexpectedly, a worse appearance grade distribution than did the timber from southern regions. Northern Finnish pine suffered, especially from large and frequent dry knots.

Otherwise, the appearance grade distributions seemed relatively usual for Finnish pine sawnwood.

Owing to the relative homogeneity of spruce timber and the small variation in timber properties between regions, it can be said that when acquiring spruce logs or sawnwood, the geographic region is less important compared with pine, except in the northernmost regions. Timber from northern Finland and the Vologda region was generally graded better compared with other regions because of its smaller annual ring width, which leads to higher density. By contrast, the risk of other defects decreasing the grade increases when trees grow in unfavourable growth conditions and the age required for the logging size increases. The appearance grade distributions of Finnish spruce sawnwood were somewhat worse for the proportion of grade A, but much better for the proportion of grade B.

The type of the log (vertical position and visual grade) was the most important individual factor for both species when predicting grade yield using log properties as predictors. When sawnwood properties were used as predictors, the properties related to knots were the most substantial explanatory variables. Geographic region was not a major factor in predicting grade yield in either approach, but was more evident for pine than it was for spruce.

Compared with other studies predicting grade yield, the accuracy of the models was weaker in this study because of the differences in the number and quality of explanatory variables. Multinomial regression models were able to predict correctly 40–50% of the NT grade and 44–59% of the T grade in individual sawn pieces. Binary regression models were used to predict visual strength grade classes in order to have only two response categories, for example, the two highest grades compared with the two lowest grades. These models were the most accurate at predicting correctly 76–83% of the dichotomous grade yield. The models predicting grade yield for pine performed better than the models did for spruce.

3.3.3 Physical and Mechanical Properties of Sawnwood

Density and MOE, the most important basic properties of sawnwood in structural uses, were highest for *Scots pine* in northern Finland, followed by western and south-eastern Finland, although none of the differences was statistically significant (Figure 3.5). By contrast, sawnwood from Novgorod had the lowest values along with Vologda, and the differences between Russia and Finland were significant. Good quality butt logs exhibited a higher density and MOE than did lower quality butt logs and the density of upper logs was lower; all differences were statistically significant.

For *Norway spruce*, sawn pieces from northern Finland had a significantly higher density and MOE, and pieces from the Republic of Karelia had a significantly lower density and MOE compared with any other geographical region (Figure 3.6). Sawn pieces from good quality butt logs exhibited a significantly higher density compared with other log types, excluding lower quality upper logs. When only butt logs and other log types were compared, butt logs had a higher density.

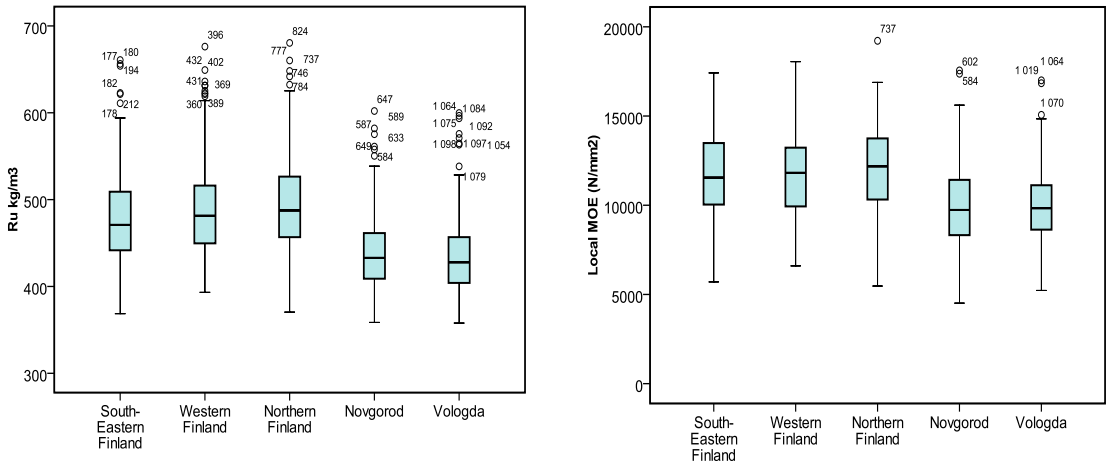

Figure 3.5 Air-dry density and local modulus of elasticity of Scots pine sawnwood by region (Hautamäki et al. 2011).

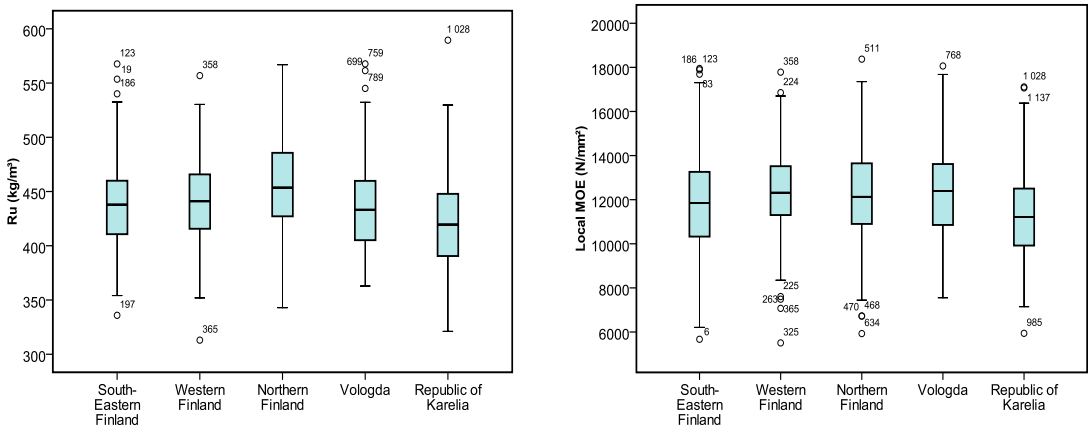

Figure 3.6 Air-dry density and local modulus of elasticity of Norway spruce sawnwood by region (Hautamäki et al. 2011).

The knottiness of sawnwood most affects the bending strength of a piece of sawnwood, along with the density and cross grain (e.g. Ranta-Maunus 2007). The total knottiness of sawnwood is expressed as KAR, which is the relative sum of the surface area of knots in the effective testing area. For Scots pine, the amount and sizes of knots are generally larger and more heterogeneous, and more dominant strength-determining factors than they are for Norway spruce. Pine sawnwood from northern Finland had significantly smaller KAR values than that from Novgorod did, where the value was the largest (Figure 3.7). South-eastern and western Finland exhibited almost equal KAR values, differing significantly from sawnwood from Russian regions and at a 5% level of significance from northern Finland as well. Norway spruce sawnwood had significantly lower KAR values in northern Finland and Novgorod compared with other regions. South-eastern Finland had significantly higher KAR values than even the Russian regions did.

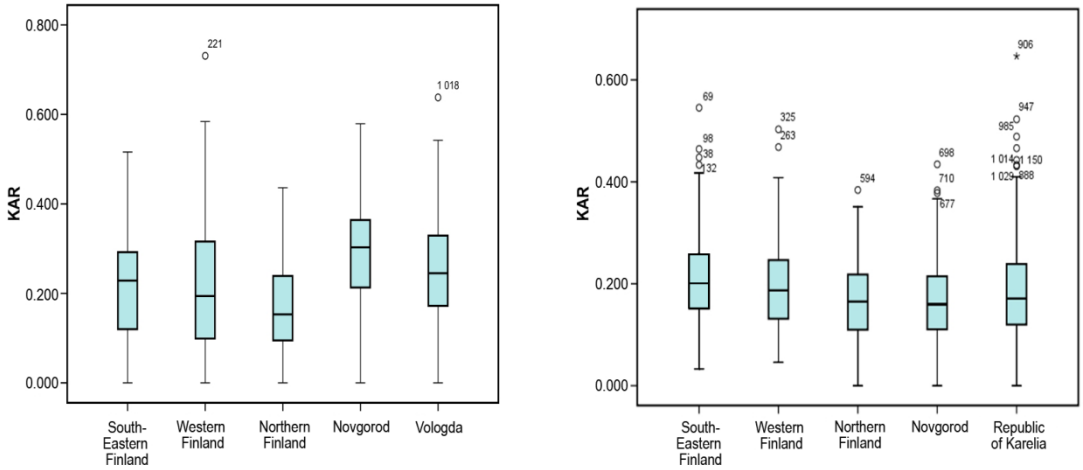

Figure 3.7 KAR of sawnwood for Scots pine (left) and Norway spruce (right) by region (Hautamäki et al. 2011).

Consistent with the results on physical wood properties, some regional differences appeared in bending strength of *Scots pine* sawnwood. The strength was the highest in northern Finland, followed by western and south-eastern Finland, although none of the differences was significant. By contrast, sawnwood from Novgorod had the lowest values of strength along with Vologda, and the differences between Russia and Finland were significant (Figure 3.8). Because the presumption of equal variances was not met between groups, Welch and Brown-Forsythe tests for the equality of means were used along with post hoc tests with a presumption of unequal variances. Sawnwood from butt logs had significantly better strength than that from upper logs. Because of the unequal variances between butt logs and upper logs, non-parametric testing was used to compare the groups (Mann-Whitney U, Wilcoxon). This was also the case when quality classes of logs were compared; then, better or lower quality butt logs had better strength values than that of upper logs.

For the strength of *Norway spruce*, sawn pieces from northern Finland had the highest values followed by Vologda, then by western Finland, eastern Finland and the Republic of Karelia (Figure 3.8). Northern Finland significantly differed from south-eastern Finland and the Republic of Karelia, while timber from Vologda had significantly higher values than those from the Republic of Karelia did. There were also differences in strength between log quality classes so that sawn pieces from good quality butt logs were better than those from any other logs were.

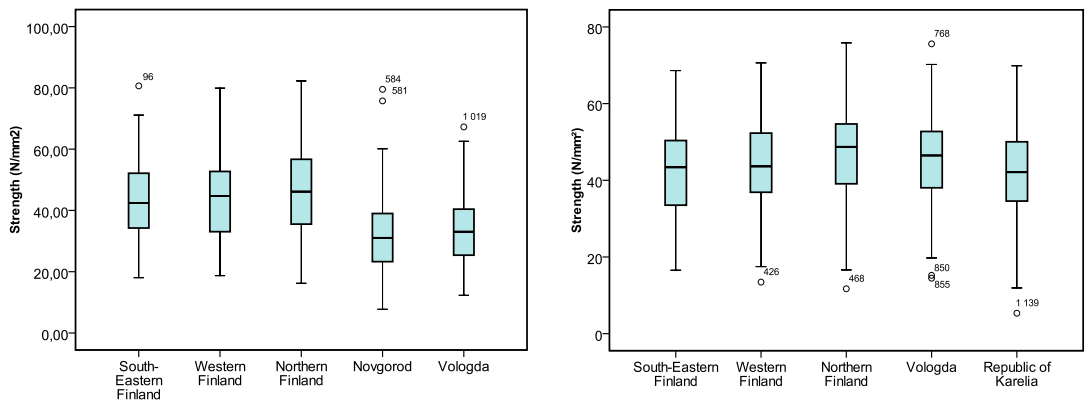

Figure 3.8 Bending strength of sawnwood for Scots pine (left) and Norway spruce (right) by region (Hautamäki et al. 2012).

The theoretical strength grade distributions of sawnwood based on European sorting criteria are shown in Figure 3.9 in accordance with the standard 338 for pine and spruce. The results show that it is possible to extract much high-strength grades of sawnwood if they can be identified without risk and that a premium could be charged for building products. For pine, the strength grade distributions were clearly better for all Finnish regions compared with Russian regions. Of the pieces of sawnwood, the normal good structural grade C30 was met by nearly 60% in northern Finland, 55% in western and south-eastern Finland, but only little more than 10% in Vologda and Novgorod. If higher strength limits were set, the between-country differences were reduced; however, C40 was still met in northern Finland by more than 30%, in south-eastern Finland by 25% and in western Finland by 20% compared with Russia (only 5% of sawnwood). Ultrahigh strength C50 could be obtained at a level of 6–9% in Finland and 1% in Russia. Even when the strength requirement was lowered, Finnish regions still stayed clearly ahead of Russian regions, for example, with 65–70% of C24 compared with 35% in Russia.

Sorting the best visual grades for joinery, interior use and furniture should be prioritised ahead of structural uses for Scots pine. In these data, removing the NT grade A prior to strength grading did not reduce the proportion of grades C30–C50, but removing both A and B grades halved the proportion of C50. The results support using visual grades A and B for the respective end-uses. Only very high strength grades would require using grade B for strength graded timber.

Of the pieces of spruce sawnwood, the normal good structural grade C30 was met by more than 70% in western Finland, 65% in northern Finland and Vologda, 60% in south-eastern Finland but only 40% in the Republic of Karelia. If higher strength limits were set, the between-country differences were reduced, however, less than the figures for pine. C40 was met in northern Finland by nearly 30%, in Vologda, south-eastern Finland and western Finland by 20–25% but in the Republic of Karelia by only 10% of sawnwood. Ultrahigh strength C50 could be obtained only at a level of 4–8% in Finland, and less than 2% in the Republic of Karelia. If the strength requirement was lowered the accepted proportion rose to 80%, except for 70% and 65% in south-eastern Finland and the Republic of Karelia, respectively.

Removing the NT grade A for joinery factories and other respective uses did not affect the proportion of normal strength grades of spruce. Instead, using grade B for cladding or interior panelling, for example, might lower the strength grade of structural timber. However, the dominant proportion of grade provides good potential for both main uses. The better pieces of grade B are sold, in practice, based on visual sorting and the worse pieces based on strength grading, when typical structural grades of C24–C30 (or C40) are aimed for.

At the high product price level of August 2007, regional differences in the commercial value of the centre yield of spruce sawnwood were rather small when applying visual sorting, but substantial when applying strength grading. The index of relative variation was 99–106 in visual strength grading (highest in western Finland, lowest in northern Finland), and in modified machine stress rating 96–104 (highest in Vologda and western Finland, lowest in the Republic of Karelia).

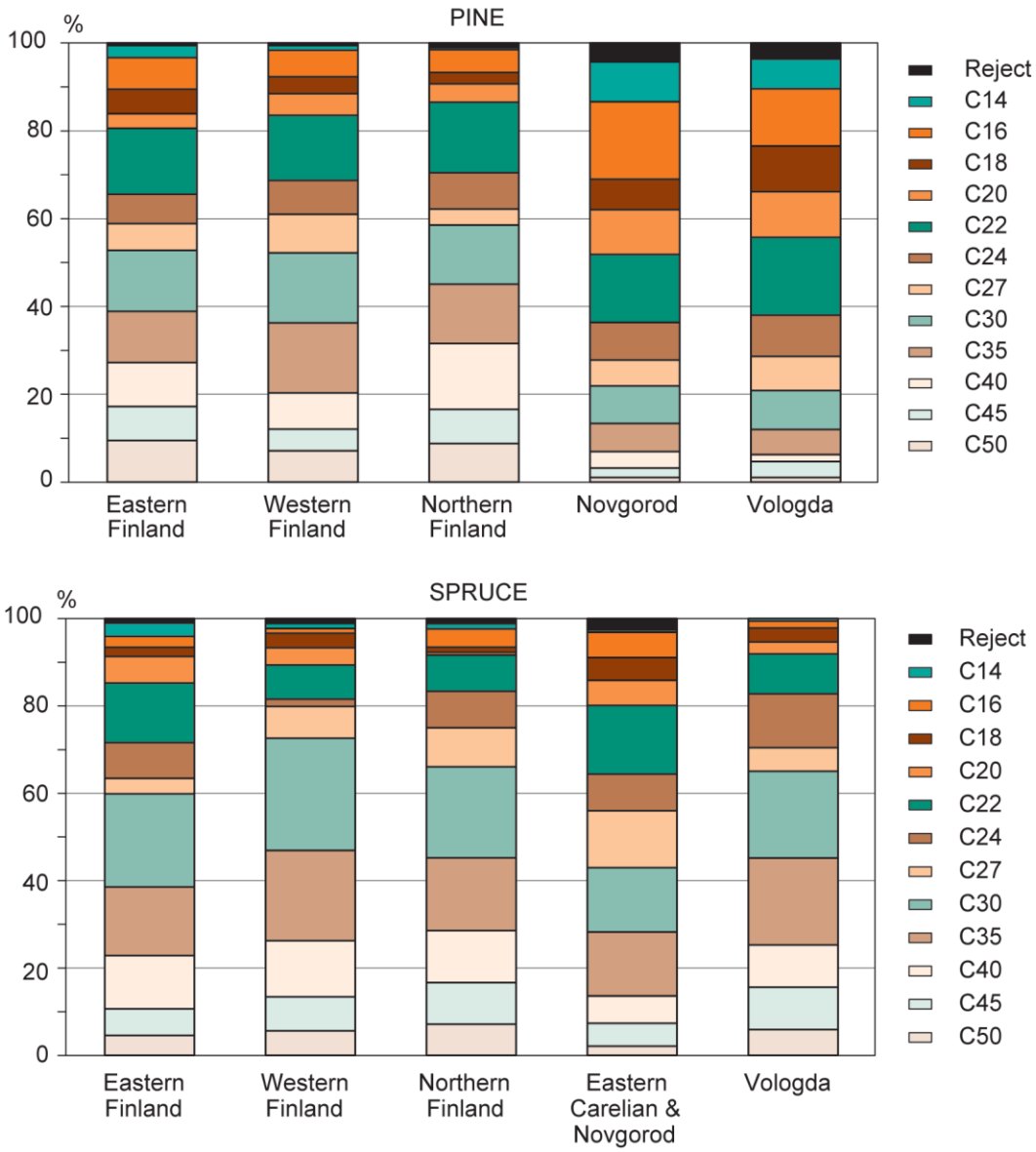

Figure 3.9 Theoretical strength grade distributions of sawnwood in accordance with the criteria of EN 338 standard and destructive testing results for Scots pine (above) and Norway spruce (below) by region (Hautamäki et al. 2011).

3.4 Applying the Results

The results above can be applied in the planning of log procurement and sawnwood purchase from regions when either appearance grade or structural grade is emphasised, considering the uncertainty in the representative ability of the data for Russian logs and wood products, owing to the large country size and variable forest and supply conditions. Profitable final uses and product profiles of wood product industries can also be indicated at the relative scale for different compositions of north-western Russian or Finnish logs of pine or spruce as a raw material. Despite the limitations of geographic sampling in Russia to only the neighbouring regions of Finland and uncertainty over the true cover of entire log potential of the logging stands, the results should show the potential of wood material for its quality as one of the basic factors for investment into the wood production sector.

Moreover, the results provide basic information for the development of wood sorting, based either on log or sawnwood properties. Strength grading may provide a substantial benefit for spruce, but not so much for pine. Modern machine stress ratings provide a moderate value added compared with the more inefficient visual strength grading. Ineffective and imprecise sorting practices with larger risk limits for individual pieces favour wood product lots with medium quality, but discriminate against lots containing substantial amounts of high-grade pieces. The results on strength and stiffness also indicate the ability of wood for manufacturing and designing structural plywood products, as well as the relative advantages and disadvantages for building applications.

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4 Russian Residential Construction Networks – Options for Finnish Timber Construction Enterprises and the Economic and Employment Impact Potential in Finland and Northwest Russia

4.1 Introduction

There are two fundamental demand segments in Finland for timber houses and other woodworking industry products in residential construction: business-to-consumer (B2C) and business-to-business (B2B). The demand in the B2C segment comprises single houses for private families for individual real estate projects.

The Finnish timber house industry, with enterprises producing mainly for these demand segments, has an annual aggregate business turnover of €837 million (Industrial Statistics 2008 figure in Loukasmäki 2010). The enterprises' product portfolio covers the whole frame of the house (floors, walls, roof) with or without plant assembly. Consequently, a majority of timber housing industry enterprises have specified their supply to meet the demand in the B2C segment. On the other hand, professional B2B timber house demand covers timber house modules and components that are delivered by the enterprises as subcontractors to the construction companies and the real estate entrepreneurs.

The second business area relevant here, the construction carpentry and other woodworking industries with an annual turnover of €1,030 million (Industrial Statistics 2008 figure in Loukasmäki 2010), comprises house frame modules and other construction components, windows, doors, door frames, stairs and roof structures, as well as garden and outdoor construction products.

There are fundamental differences between the B2C and the B2B market demand. First is the current market size and major business models among the enterprises and construction traditions concerning contracting. Enterprises specializing in timber house assembly apply industrialized components and modules in B2C market construction. The timber frame components and modules produced by the subcontractors are used as universal components in B2B construction by workers who mainly operate with concrete modules and components.

Total cost efficiency is one of the primary competitive advantages (CAs) among the residential construction enterprises in Finland. Traditional materials and solutions normally minimize the risks in B2B projects, creating a threshold for the introduction of new product solutions (e.g. timber modules and components). A market breakthrough is still missing in B2B timber frame construction in Finland irrespective of the high process and delivery qualifications among the timber housing industry enterprises specializing in B2B market supply.

However, recent institutional changes related to climate change and carbon sequestration policy have improved the relative CAs of timber-based construction solutions. Subsequent programmes working towards an improved atmospheric carbon balance will enhance the interest of B2B construction enterprises in adopting timber-based alternatives in their residential construction solutions. New recently developed industrial timber frame construction products for residential house construction provide both strong life cycle consideration qualities and sustainable environmental quality in industrial production to minimize the negative external environmental impacts. The enhanced potential B2B timber frame demand has recently

activated timber industry enterprises to invest in production capacities and innovative product development (e.g. Cross-Laminated Timber by Stora Enso (Wood Products… 2009) and Kerto System solutions by Finnforest (Kallunki 2005)).

Timber frames provide, through optimum CO_2 and energy scorecard qualifications, sustainable residential construction solutions to contribute to climate protection. An enhanced supply of industrially produced massive timber frame structures is needed to make them competitive in B2B construction material markets. The new capacity will also provide opportunities for the competitive export supply of these products and system solutions.

There was constant growth in the Russian residential housing construction market, especially in large metropolises, e.g. in Saint Petersburg and the other parts of Northwest Russia, from 1998 to 2008. These markets provided growing opportunities for residential construction value networks for new business but also created markets for imported construction modules and components. Finnish timber housing and other woodworking industry enterprises have market potential in Russian residential construction markets.

The managers of those enterprises need orientation to new international business. Business in the Russian real estate and construction cluster has many challenges and well-prepared strategic planning is a necessary condition for long-run profitable entrance to those markets (Rautee 2000). This is one of the fundamental strategic issues. There are special issues in the Russian business culture, e.g. a valid business model approach that makes the application of a gradual internationalization approach challenging in Russian markets. The objectives of a strategy concerning permanent business activities in the Russian market are of great concern from the very beginning. DUI skills (learning by doing, using and interacting) based on tacit knowledge are important to Finnish expatriates working in Russia. It is important that the key expatriates command the Russian institutional business infrastructure related to real estate and house construction irrespective of the position and status of the Finnish enterprise in the construction value network with which they work (Niittymäki et al. 2010).

The use of growth potential has in recent research findings been identified as the most influential factor among the Finnish SMEs entering the Russian markets (Oinonen 2008). Direct industrial investments in Russia and partnerships with Russian enterprises have provided good provisions for profitable business. Marketing and proactive actions towards value network participation are among the key proactive tasks that benefit the Finnish timber construction industry enterprises in the Russian construction market. Business customer management and market entrance solutions are identified in the prior research as the key issues to be prepared. Business based on mutual trust implies transparent network relations but also intra-firm reactivity to the unexpected changes that are frequent in Russian markets (Niittymäki et al. 2010).

Business activities and their future enhancement potential in Russian B2B timber frame residential construction networks have been the major research questions in this part of the research consortia. The major research activities have consisted of a) academic research on the alternative solutions to market entrance into Russian timber frame construction and b) survey research on the key success factors among the entrants in those markets. The potential CAs related to the low-rise wooden town construction concept and the related value chain and logistics were the major topics of a) and the applied strategies among the entrants were the major topics of b). The low-rise wooden town construction concept, which has provided good business opportunities in Finland, seems to have many potential CAs to be successfully applied

in Russia. Many Finnish enterprises, especially small and medium-sized enterprises (SMEs), tend to initiate their Russian business activities by reacting to temporary market opportunities (Narva 2010). This business normally provides only limited support for the strategic planning of permanent establishment in Russian markets, thus calling for proactive strategy planning.

The current Russian institutional business infrastructure, consumer preferences and findings of Finnish enterprises in the market were the key activities in this research. Much of the survey material applied in part b), especially that related to the Russian consumer attitudes and preferences for living, were collected at the residential construction fair arranged in Kymleno district in Leningrad Oblast in 2008. This text summarizes the research output material published in the reports "Pientalojen aluerakentamisen projektiliiketoiminta Venäjällä" (Marttila & Ollonqvist 2008) and "Puurakentamisen suomalais-venäläinen liiketoiminta Venäjällä – vientikaupasta verkostoihin" (Marttila & Ollonqvist 2010). This text also summarizes the findings in this and other related research concerning the good business practices valid in the Russian residential construction market.

4.2 Business Infrastructure in Russia

4.2.1 Russian Economy

Russian Economy after the Global Recession

Economic growth in Russia has largely been based on income from oil and gas exports from the economic recession and exchange rate depreciation from 1998 onwards. The strengthening of the exchange rate of the rouble during the 2000s has even exaggerated the position of oil and gas exports. Many Russian domestic sectors (food production as an example) have faced deteriorating cost competitiveness with respect to cheapening imports. The constant increase in the global unit prices of oil and gas explain the rapid recovery in the Russian economy from 1998 onwards.

The enhancing export incomes have allowed federal budget balancing to the Russian Government as well as the establishment of the Reserve Fund. Oil and gas export incomes constitute one-third of the annual GNP and 50% of the federal budget income (Sutela 2008). There are ever-growing challenges regarding the sustainability of this huge export income surplus. The domestic oil consumption expansion and capacity shortcoming in oil production both tend to impede the continuation of the export rate. In addition the high income elasticity of imports challenges the export income surplus (Simola 2009).

The relative proportion of the service sector grew at the beginning of the twenty-first century. Russia achieved positive fixed investment growth in 1999. Finnish investors have had a visible role in Saint Petersburg and Leningrad Oblast (Ivanova et al. 2006). There has also been an effort to attract more investments in Saint Petersburg and Leningrad Oblast by several investor-support methods (Ivanova et al. 2006).

The global recession has temporarily curtailed investment and the durable commodity import demand, and the recent recovery in the Russian GNP, starting from the third quarter of 2009, has smoothed thereafter. Uncertainty concerning the future economic development has

increased both in enterprises and in households. Single families have decreased their durable commodity import demand and residential construction has also decreased.

There is a unanimous vision of a 5–6% future growth rate per annum in the Russian GNP among the institutes making economic forecasts (Korhonen 2010). Private consumption, constituting half of the Russian GNP, is assumed to continue to grow during the next years. The purchasing power of wages and pensions has steadily increased and the rate of unemployment decreased. Index values measuring confidence in economic development have grown, thus also explaining loan financing interests. However, the propensity to save is assumed to remain low in Russia (BOFIT Venäjä-ennuste ... 2011). The recovery and the steady-state development thereafter in the Russian consumption-driven economy are assumed to remain on a lower level than before the global recession. High import elasticity seems to continue in Russia, thus keeping the tendency towards economic volatility high. The rapid demand increase in residential commodity markets in the future can create demand potential for Finland and especially for the modules and components of timber frame residential construction. These export demand impacts on Finland are due to the investment demand growth in the Russian economy (Sutela 2010).

The price competitiveness of Russian industry products in export has had a market basis: cheap energy and a low wage level and rouble exchange rate. This policy has been supported by the Federal Government improving positions for new entrepreneurship in the production of durable consumption goods to substitute imports (Korhonen 2008). The decrease in the new generations coming into the labour markets implies a systematic increase in productivity. The productivity target is also valid for export goods and services (Sutela 2010). The smoothly decreasing inflation and predictable exchange rate have stabilized business infrastructures in Russia. Russian wage rates will increase in the future due to the low incidence in the labour markets. Costs in communal services and investments in infrastructure and the energy sector will increase in the future (Lainela 2008) and the cost factor is losing its importance as the production costs are growing in Russia (Ivanova et al. 2006).

Russian Exchange Rate Policy

Russia had the third-largest foreign currency deposit in the world after the 1998 economic crisis. This deposit was divided into two separate funds in early 2008. The first one is the national stability fund which has the threshold volume limit of 10% counted from the annual GNP. It provides transitory funds for the public deficits. The second one is the sovereign fund deposit which is used to acquire incomes from international financial markets. The national welfare share of the deposit operates as a sovereign fund to cover the public pension liabilities. Sovereign fund deposits are invested to acquire the incomes defined in strategic targets. Yields from the sovereign fund deposits have provided resources for innovation and knowledge accumulation investments (Sutela 2008).

The credibility of the rouble exchange rate disappeared during the world market recession in oil and other raw material markets during 2008. Foreign financial investments in Russia curtailed during 2008 and trust in the exchange rate preservation of the rouble disappeared. The Russian Central Bank expanded central bank financing, preserving the exchange rate stability. The state budget funds were deposited in commercial banks to counteract the exchange to dollar deposits (Solanko 2009).

Sharp depreciation in the exchange rate provided new cost competitiveness to the export industry from late 2008 onwards (Korhonen 2010). The depreciated rouble promoted foreign debt financing among Russian corporations and attitudes against foreign investments became more popular (Kaartemo & Liuhto 2010). The inflation exceeding the average international rate together with a high exchange rate for the rouble have rapidly deteriorated the international competitiveness of exports in Russia (Korhonen 2010). High world oil prices have kept a strong rouble exchange rate that in turn has improved domestic price competitiveness (Korhonen 2010).

Recent expert forecasts expect a high exchange rate that together with import customs keeps the price competitiveness of foreign goods and services low. The annual 10% GNP growth in the Russian economy is sustainable if the rate of increase in the exchange rate continues at the rate realized during the first years of the 2000s onwards (Sutela 2010). The latter scenario allows strong investments in house construction with products and services produced inside Russia. The low propensity to save in Russia (6% of disposable gross incomes) works against the challenge of financing construction processes together with the current rules that exclude unfinished buildings as loan warranties (Solanko 2009).

Institutional Business Infrastructure

Informal and grey economy business patterns can frequently be identified in the Russian business infrastructure. Barter trade, paternal labour relations and corruption are visible. It is important to notice that the patterns of the grey economy differ from those common in Finland and other highly industrialized countries (Kosonen & Parviainen 2010).

There was a stubborn mistrust in Russian business relations throughout the whole ex-Soviet period due to corruption, institutional viscosity and resource deficits. The unexpected and sudden changes in legislation and implementation practices are even more serious challenges to the business decisions in Russia (Kosonen & Parviainen 2010). Unofficial practices are an inseparable part of the Russian business infrastructure. They are simply said to be the major way to achieve things in Russia.

According to Ivanova et al. (2006), the authority contracting problems include the slowness of decision making, additional costs and the amount of work dealing with authorities. Many foreign companies need Russian professionals to deal with the various inspections, work permit procedures and other authority connections, as well as the influence of the company's director, in order for things to proceed smoothly. Ivanova et al.'s (2006) findings confirm that operating a Russian company has become easier, taxes have decreased and the possibilities for authorities to interrupt a company's operations have decreased. The judicial system works reasonably well. Also more opportunities have appeared for smaller companies, as large (public or private) projects are now split into smaller projects, as is usual in Western economies, which has made it easier for smaller companies to take part in the projects as subcontractors (Ivanova et al. 2006).

Product certification has been a rule in the Russian economy but has recently lost significance. There have been enterprises that have speeded up certification processes against high compensation and consequently the Federal Government has diminished the list of commodities implying certification to be accepted into Russian markets (Kuusi et al. 2010).

4.2.2 Business Infrastructure in Residential House Construction

Consumer Preferences and the Global Business Model in Russian Residential Construction Business Networks

Construction, especially residential construction in Russian metropolises, has been among the fastest-growing business sectors in the Russian economy since the 1998 recession. Numerous potential CAs and business opportunities in Russian residential construction markets are also available for Finnish enterprises serving construction value networks (Ollus & Torvalds 2005). There are research outputs confirming that the proximity of Saint Petersburg and the related Leningrad Oblast areas constitutes a permanent CA for Finnish enterprises (Ivanova et al. 2006, Herranen et al. 2009, Tolvanen 2009). Those CAs concerning timber construction modules, components and related services are available for Finnish timber housing and other woodworking industry enterprises. This market potential could be confirmed in the empirical surveys undertaken during this research (Marttila & Ollonqvist 2010). Russian consumers appreciate Finnish quality concerning technical solutions and their implementation in general (Ivanova et al. 2006). These qualifications are also valid in goods and services provided in construction networks (Marttila & Ollonqvist 2010). Finnish construction enterprises have earned a good reputation in the long run, from the barter trade period of the Soviet era.

Rational enterprise planning to enter into export markets starts from the identified potential demand and related competition structures (see Porter's five forces analysis in Chapter 4.4.6). Business interest evaluation and the consequent focus on those demand segments that provide CAs for the enterprise are among the necessary conditions for growth. The market entrance should then be created according to the relevant strategy. However, there is empirical evidence concerning the export trade that is based on temporary market opportunities. The latter is especially valid among SMEs in Russian markets (Narva 2010).

Finnish enterprises considering access to the Russian construction market can acquire sustainable CAs through a developed customer and consumer approach (Tretyak et al. 2010). Traditional product and manufacturing orientation is common among many industrialized national construction clusters. Business structures (size distribution among the enterprises and value networks) are heterogeneous in many countries, Russia and Finland among them. However, global competition has shifted the business orientation among construction industry enterprises and networks more towards the service needs and preferences among the final customers and end-users. This new orientation provides both challenges and opportunities for the business environment screening among the enterprises entering the market. Market screening and business focusing are challenging tasks because the changes are likely to become more rapid and the demand implies faster responses than before. Systematic and deep market analyses and information processes aimed towards better understanding play a role in strategic orientation when redirecting the company's or the network's vision and strategy for the selection of a business model or market positioning.

The framework in this context can be divided into:

- *Access evaluation of the market segments concerned*
- *Detailed analyses on*
  - key aimed customers (who buys and buyer opinions)
  - major distribution channel (competitors' distribution channels)
  - dominant pricing models and terms of delivery

- aspects of cost competitiveness

– *Analyses concerning access to supporting network actions*
  - changes of distribution channel and competitors' activities
  - product-level demand forecast
  - continuous follow-up of prices and projects (Riihimäki et al. 2010).

Tretyak et al. (2010) have stated that intrafirm networks towards customer-oriented relationships in B2B construction networks are valuable to establish, maintain and enhance them systematically in a transition country context like Russia. Market orientation (MO) covers both customer orientation and competition orientation. In business networks MO covers market knowledge sharing, including customer and competitor knowledge, and supporting intrafirm information systems, joint planning and established control structures (Tretyak et al. 2010). The main idea supporting the proactive approach is that the reactive approach does not provide a sufficient information basis for decision making in relevant value, risk and cost issues. The proactive approach suggests not only reaction to some external impacts but also the development and implementation of certain market actions (Treyak et al. 2010).

The objectives behind the sustainable international business strategy can be based on global or gradual market expansion (Barkema et al. 1996). Global business adapted products and distribution systems characterize a global strategy whereas gradual learning and assimilation are typical in the gradual internationalization approach (Johanson & Vahlne 1977). International business has gradually become easier in highly industrialized countries and especially in integrated market areas like the EU. There are supporting changes like unified standards and norms. Research evidence from the gradual internationalization approach indicates that the approach with first steps into a parallel market to the home markets has provided good results (Hyder & Abraha 2003). Research findings support this gradual internationalization approach when great differences exist between the targeted export country and the home country, respectively (Forsgren 2000). Russia as the first export market is therefore a challenge to Finnish enterprises.

An adequate management model and consistent training for the expatriates have typically been the key elements behind the success (Tolvanen 2009). Hollensen (2001) advises case-specific projections and risk analyses of incomes and outlays. Systematic training of the expatriates concerning the adaptation to the business culture in the export country is also frequently recommended (Tolvanen 2009).

The more the expatriates know about the Russian business culture and institutional infrastructure, the more their enterprises have proactive and reactive capacity in the market (Ollus & Torvalds 2005). There are fundamental gaps in the training available in Finland concerning Russian legislation and justice conventions as well as project management and supervision (Ollus & Torvalds 2005, Tolvanen 2009). The latter is especially valid in issues of management.

Federal Residential Construction Support Programmes

Since autumn 2005 Russia has commenced four federal development programmes aiming to improve living conditions in Russia (Lainela 2008). The programmes, launched by President Putin for health care, schooling, housing and later agriculture, are aimed to restructure inefficient structures by substituting them with modern activities (Kuusi et al. 2007).

The small size and poor condition of the Russian housing stock are the main factors behind starting housing development programmes on the federation level. Russia had already started a federal housing programme in 1993, the aim of which is to increase housing construction by the private sector. This led to the establishment of a governmental development programme, Svoy dom ("Own home"). The most important targets of this programme are the enhancement of affordable one-family house construction, the development of housing standards that emphasize individuality and the improvement of citizens' wherewithal in housing procurement. The programme also promotes new material solutions such as timber frame construction.

The federal programme for affordable and comfortable living (*Dostupnoye i komfortnoye zhilyo dlya grazhdanam Rossii*, 2002–2010, http://www.rost.ru/projects/habitation/habitation_main.shtml) aims to create a functional housing market in Russia and to speed up the structural repairs to the systems inherited from the Soviet time with the public assistance of 22 billion roubles (€0.60 billion at the 2006 exhange rate) in 2006. The federal housing programme is aimed to:

- make repairs to and replace old residential houses and communal service infrastructures
- enhance new residential construction and
- build up the loan financing system to enhance private tenure in housing.

There were also separate tasks aimed to:

- improve housing among special groups and
- make investments in the communal service infrastructure.

Also, the juridical basis has been created and several laws accepted.

However, incentives to invest in new house construction depend on numerous factors that are outside the programme tasks: land tenure, city planning, construction permits and access to communal service infrastructures (water, sewers, electricity and heat). The recent rises in construction costs have impeded the full use of the programme subsidies. Timber frame construction was introduced into the programme as a special topic (Chernykh 2008). The enhancement of timber construction value chains is assumed to improve business opportunities for new entrepreneurship in timber-based value chains and networks. Russia aims to improve conditions for the added value of harvested domestic lumber and domestic residential construction is among the domestic means to achieve that. There are, however, identified knowledge deficits as well as a lack of standardized construction statements and standards. The equity of the governmental mortgage agency (Agentstvo po ipotechnomu zhilishchnomu kreditovaniyu, AIZhK) was raised by 200 billion roubles for the development of mortgage markets.

In the middle of 2009 the following changes were made to the project's emphasis (Programmy realizatsii … 2009):

- instead of the development of mass construction, the aim is to support activities in house construction in general
- instead of governmental support in the housing markets, the aim is to support demand by credit granting
- instead of improving residential and municipal services (*zhilishchno-kommunalnye uslugi*), the aim is to support the quality of the municipal infrastructure.

There were no changes to the quantitative targets for construction. However, it seems that the given target will not be realized in the given time.

For the Finnish industry, business expansion and development within the limits of the national programme in Russian are challenging. The price level that is determined by tender is often remarkably low. It makes it complex to participate in projects that are executed based on social targets. On the other hand, the housing needs and mass construction culture make it possible to execute extensive site development projects.

For example, improving infrastructure, easier use of estates and increasing the bank loans also ease the implementation of middle- and highly priced houses, which often belong to the priorities among the Finnish companies. The development of a legislation basis and political approval of small-house construction will also enhance the implementation of projects that are not executed as part of the national programme. The policy transfer from mass production support to general housing construction promotion can support unique site construction.

There are construction carpentry and other woodworking industry enterprises in Finland with good command to make a profitable business in small-house construction (semi-detached houses, town houses, small blocks of flats) but mainly in B2C market segments. Timber frames are a relatively new activity in Finnish B2B construction and mostly in Wooden Urban Village projects (Karjalainen & Patokoski 2007). Due to this, the Finnish construction carpentry and other woodworking industries may have the strongest competitiveness in rather unique and small construction areas (Marttila & Ollonqvist 2008).

The site development model is utilized these days in Russia in many large-scale construction projects. Because residential area construction places many obligations on contractors relating to service construction, this may offer new possibilities for construction carpentry and other woodworking solutions. Service construction extends to the construction of nurseries, schools, health centres, trade centres etc. Small-house site development in many cases resembles Finnish suburb construction in the 1960–1970s since the site developer has possibilities to affect the planning. The dominance of blocks of flats in the current residential construction in Russia creates difficulties for wood usage as a frame structure and Finnish “low and dense” (matala ja tiivis) concept solutions can provide development benchmarking examples (Marttila & Ollonqvist 2008).

There are also several other ongoing programmes that are relevant when evaluating the development of wood construction in Russia. The following programmes are examples of these:

– Development fund of housing construction (*Fond razvitiya zhilishchnogo stroitelstva*)
  http://fondrgs.ru/
  The tasks of the fund include the promotion of real estate business in construction, planning coordination in site and urban development, the coordination of the implementation of housing construction programmes, the production of construction materials and the establishment of industrial parks. The fund also promotes the use of energy-efficient and ecologically sustainable technologies and materials in housing construction. The development fund was founded in 2008.
– The national agency of small house construction (*Natsionalnoye agentstvo maloetazhnogo i kottedzhnogo stroitelstva* (*NAMIKS*))
  http://www.namiks.ru/
  NAMIKS is a non-profit consortium that incorporates organizations in small-house construction markets. It also works as a partner in the Svoy dom programme. The members of the consortium include among others development

and construction companies, material and machine manufacturers and financial institutions.

– Development of low-carbon wood construction in Russia (*Programma podderzhki razvitiya nizkouglerodnogo derevyannogo stroitelstva v Rossii*)

  The common interest in Russia and Finland is to increase the proportion of wood in construction and develop low-carbon construction by using renewable energy sources. This corresponds with the sustainable development and economical interest of parties. The programme is coordinated in Russia by the Association of Wood Housing (*Assotsiatsiya derevyannogo domostroenyja*, http://www.npadd.ru/) and in Finland by Puuinfo Oy and Rakennustieto Oy. The programme will be implemented in the years 2010–2012.

– The forest sector development strategy in the Russian Federation (*Strategiya razvitiya lesnogo kompleksa Rossiiskoi Federatsii na period do 2020 goda*)

  By the common order (*prikaz*) of the Russian Ministry of Industry and Trade and the Ministry of Agriculture the strategy of the forest sector in the Russian Federation till 2020 determines the primary development trends and their realization methods and operates as a conceptual basis in partnership development between the government and the private sector in the forest sector. It also ensures unified actions in different levels of executive power and legislative power in long-term development and operates as basic material in decision making on investment grant decisions for primary projects in the forest and woodworking industry in the Russian Federation.

Land Tenure, City Planning and Construction Permits

There are barriers to the effective fulfilment of the federal residential housing programme. The excess demand for construction land is due to the fair status of city plans in areas of strong residential construction interest but also the bureaucracy in communal construction permits and the fair supply of communal service infrastructure. The majority of residential construction land potential has private tenure status in those areas causing scarcity in public land supply. The public residential construction land tenures supplied in open auctions are typically large (40–100 hectares), impeding the creation of compact residential areas that are most suitable for low-rise timber frame construction (Marttila & Ollonqvist 2008).

High unit prices characterize private construction land markets in or nearby large metropolis areas in Russia, implying intensive construction when the low-rise mode is applied. The bureaucracy related to land tenure and construction permits is generally considered complicated and time-consuming in Russia. The substitution of an old building with a new one is popular and easier (Marttila & Ollonqvist 2008).

Many structural changes are needed to make Russian construction land markets competitive and function to support the fulfilment of the federal housing construction programme. One of the challenges is the system of mutual understanding on the borders between the neighbours to obtain the construction permit. In addition, other challenges include the high registration costs and difficult bureaucracy to identify the real owner of the land tenure (Tekoniemi 2007).

Bureaucracy and city planning have special obstacles in the case of land developers and B2B construction projects, making the challenges and unexpected changes faced by the Finnish timber industry enterprises high. There are success stories of Finnish log house industry

enterprises in B2C construction projects in Russia. They can frequently be explained by easy city planning and construction permit conditions.

Finnish Wood Processing Industry Exports and Russian Import Customs

The Federal Government of Russia has effective use of forest resources and a profitable forest industry in its economic policy agenda. Those objectives aim to strengthen the relative position of the forest cluster in the Russian economy. Import and export customs, subsidies for the investors and new forest legislation (Lesnoy kodeks ... 2006) all serve that objective. Detailed analyses concerning the policy implementation are important for fully understanding the true objectives behind the federal policy. The Russian Federal Government has mainly applied 15% customs (counted from the CIF value) to forest products. These customs on wooden doors, windows and industry-produced houses doubled (to the 30% level) during the 1990s. The customs for industry-produced houses were stated as 20% from 2001 onwards (Jutila et al. 2010).

Roundwood export customs were an important signal from this policy up to the new statement from the beginning of 2011 (Postanovleniye ot … 2010). The new customs effectively restrict roundwood imports from Russia to Finland. The forest industry in Finland must find new domestic demand to compensate for the prior roundwood imports from domestic forests. The decrease in the roundwood imported from Russia has also changed the direct and multiplier impacts from the procurement and use of roundwood in both countries but in favour of Finland. The roundwood export customs also create a domestic challenge in Russia: how to create new processing capacity for the construction carpentry and other woodworking industries.

Russian customs policy on imports has been effective if we consider the aims and planning of direct investments in industry production among the Finnish timber industry enterprises. The customs policy together with the bureaucracy related to the border inspections make the product export of mass customized timber construction modules and components unprofitable. High added-value product exports (e.g. log houses for B2C construction) can cope with the import customs and export with profits.

The impacts of customs can easily be seen in Figures 4.1–4.3, expressing the volumes and added values of exports from Finland to Russia in 2002–2009 on wood windows, wood doors and industry-produced timber houses, respectively. The decreases in export volumes are partly due to the substitution of production capacity investments in Russia by Finnish enterprises.

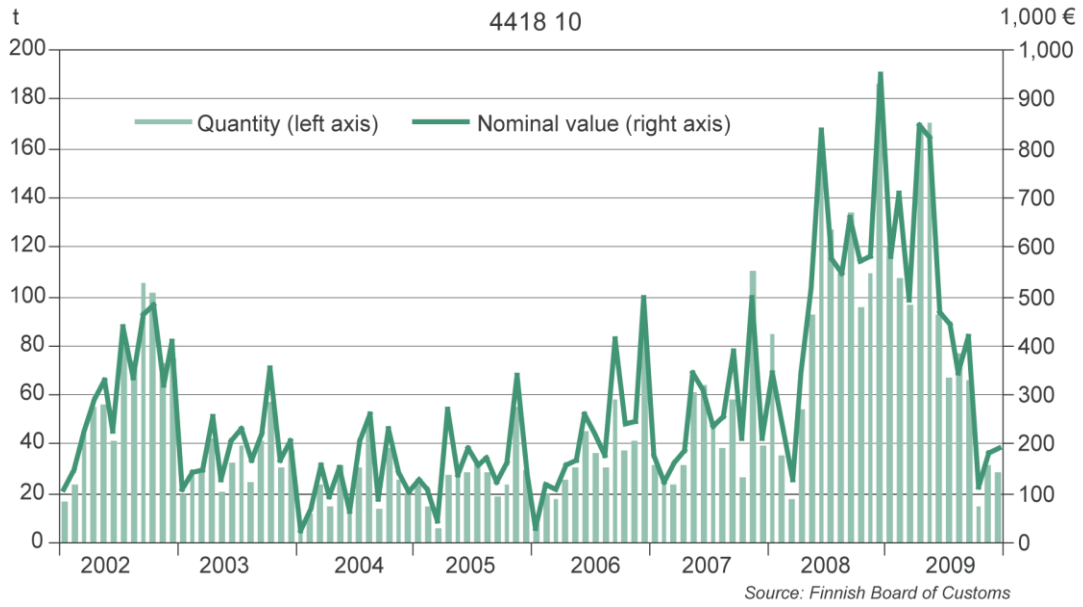

Figure 4.1 Exports of wood windows from Finland to Russia during 2002–2009 (Jutila et al. 2010).

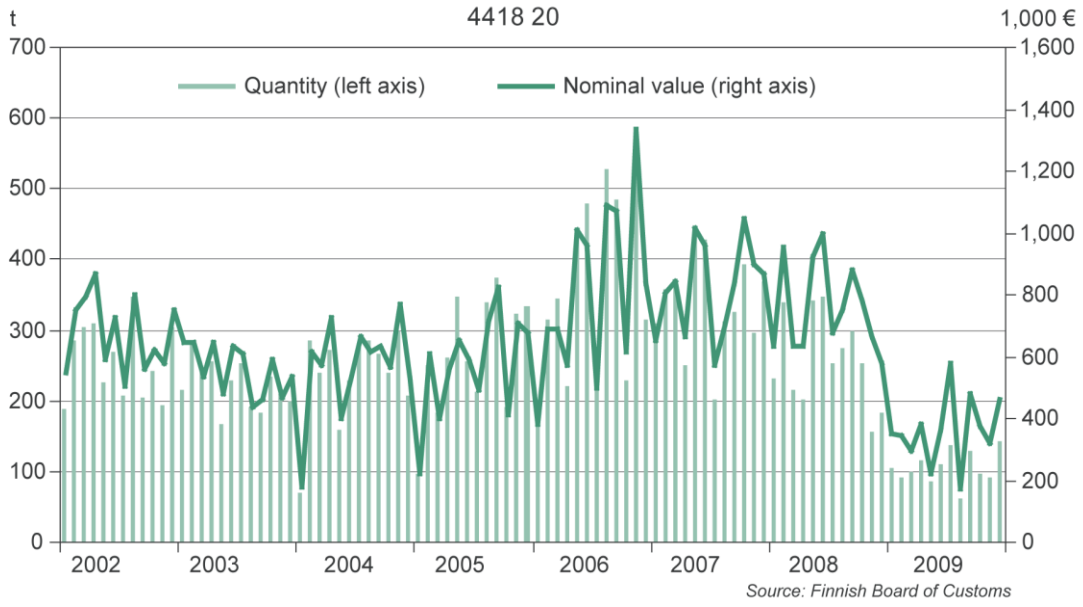

Figure 4.2 Exports of wood doors from Finland to Russia during 2002–2009 (Jutila et al. 2010).

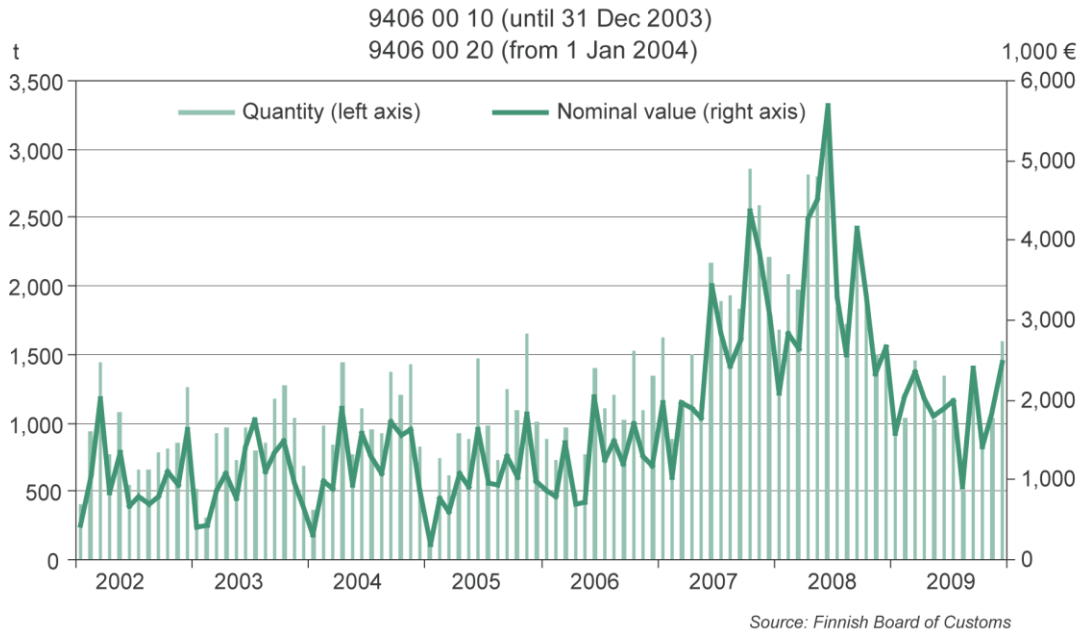

Figure 4.3 Exports of industry-produced wood houses from Finland to Russia during 2002–2009 (Jutila et al. 2010).

The Russian economic policy supports the importing of forest industry machines and equipment with the customs policy. This policy has been successful and exports of that equipment constantly increased up to the 2008 recession (Jutila et al. 2010).

The decision concerning WTO membership has been unsolved for a long time in Russia. The Federal Government still considers the advantages of membership to be inferior. The major opponents of membership are strong in Russia and the protectionism behind it received wide support in the recession in the 2000s. Membership would restrict the options to preserve the priorities of domestic suppliers over international ones. The current customs policy supports the CAs of domestic enterprises. However, there is still a lack of competition in many Russian industries (Solanko 2009).

Residential Housing Construction Financing in Russia

There have been new developments in Russian residential house loan financing. The dominance of wealthy house and apartment buyers has been the major outcome of the reluctance among Russian citizens to use debt financing for their living. There is widespread uncertainty concerning the stability of the economic development, making debt financing risky. However, Russian commercial banks have introduced new loan products into the financial markets, thereby decreasing the loan prices and lengthening the loan payback periods applied in contracts.

There are scenarios projecting improvements in the low-rise residential construction business but especially the position of timber frame construction based on regional construction projects. The Federal Government of Russia is aiming for improved certified residential house loan financing. However, the terms of loan financing are not equal among the oblasts and the metropolises like Saint Petersburg and Moscow.

There are also new developments in the warranty practices applied by banks and other financial institutions. A loan warranty based on real estate construction cannot be registered before the final public inspection of the construction has been accepted, making banks unable to accept uncompleted projects as warranties. This development has directed the demand of public warranty loans for buying old apartments and houses. It is also difficult to take residential house and apartment buyers into the construction planning in Russia.

The current warranty practice and the deficiencies in loan financing can be identified behind the difficulties among the Finnish timber housing industry enterprises in obtaining payments. Therefore, prior payments are the major current pattern of payments. This pattern was considered a business obstacle by the majority of the interviewed CEOs in this research and a new payment confirmation system is needed to be able to consider other modes of payment. However, there were CEOs in the survey who accepted the functioning of the current system (Marttila & Ollonqvist 2010).

Many of the enterprises trading with Russian partners have used intra-firm or expensive risk loan financing in their trade contracting. This is due to the prior payment only being applicable in small-size trade (Marttila & Ollonqvist 2010). The short-term risk financing used by the construction enterprises has high interest rates and makes participation risky for Finnish timber housing industry enterprises. Currently, the Russian subsidiaries of Finnish enterprises can acquire financing from either Russian commercial banks or international banks in Russia. Foreign financing is commonly applied in large and long-lasting contracts.

4.3 Consumer Attitudes

4.3.1 Russian Customers' Housing Demand

Russian customers' requirements in terms of quality and other features have increased and are also still increasing in the lower demand segments. The fast demand growth and exiguous supply account for the fast price growth in Russian metropolises and their surroundings. Weak supply is a consequence of the lack of suitable construction sites, especially in those areas where HPAC, electricity and road networks exist (Marttila & Ollonqvist 2008). The demand for one-family houses is accounted for by purchasers' high paying capability. This is typical in metropolises. The higher the purchaser's purchasing power is, the more personal customization is required. These requirements connect to all the facts related to living, such as the location of the house and its type, structural details, size, design and finishing. Construction companies try to react to dynamic demand, and in the biggest cities housing production that is equivalent to the demand has grown.

There is a lack of home buyers with high paying capability and willingness. On the other hand, there are fewer and fewer competitive advantages for foreign product and service manufacturers that offer low-quality standards because large-scale Russian construction companies and their value chains dominate the standard production markets.

4.3.2 Kymleno Housing Fair and Customer Questionnaire

Kymleno Housing Fair was organized in Koltushi, Leningrad Oblast (circa 25 kilometres from Saint Petersburg). The reason for organizing the fair was that there was no practical experience of the suitability of modern Finnish wooden house areas in Russia. The housing fair served as a pilot project, the target of which was to familiarize Russian customers with Finnish small-house construction and present small-house construction as a way of life.

According to Russian expert opinion, it is hard to estimate the development of individual house construction and site development. However, the general estimation was that site development will be more profitable than individual construction in the Russian conditions. Russian experts criticized the high prices and exiguous cooperation with locals. Appearance and space planning were considered as good aspects in the Kymleno area. The organization of a housing fair is problematic because the housing fair concept has not become established in Russia, thus it is not possible to assure great attendance.

The housing fair offered an opportunity to investigate how consumers are disposed towards Finnish wood-based site development. The modern wooden town concept has been promoted in Finland and there have been efforts to export this model to Russia. From the Finnish point of view Salovaara (2006) has investigated consumer attitudes but in Russia there has been no analysis of how Finnish-type houses are regarded. The target of this data collection was to find out how Finnish-type modern wood construction is suited to site development in Russia.

In total 133 visitors completed the questionnaire between 15 September and 9 November 2008. The questions were related to the following topics:
– The suitability of several construction materials (wood, stone, brick) for the construction selection criteria of cladding and finishing (price, appearance, easy installation and use and easy maintenance)
– the image of Finnish construction companies and wood products in construction, and a comparison of Finnish and Russian wooden houses in different price groups and the main criteria in house purchases.

4.3.3 Inquiry Results

The main inquiry results are expressed next. The following factors applied in grouping factors:
– age group
– sex
– current house type (one-family house, block of flats, other)
– occupational group (construction sector, other) house purchase or building plans (no plans, plan to buy, plan to build)
– price group of planned house (under $200 000, over $200 000).

Most answers were collected on a Likert scale. The differences between the groups were identified using the Mann–Whitney and Kruskal–Wallis tests. In the results the 90%, 95% and 99% confidence intervals were described with one (*), two (**) and three (***) asterisks, respectively.

Almost all of the respondents lived in Saint Petersburg or Leningrad Oblast. Among the housing fair visitors wood was a more popular material than stone or brick. This is understandable since

the housing fair drew people interested in wood construction. On a Likert scale of 1–5 wood received grade 4.6, brick 4.1 and stone 4.0.

Those visitors who had no construction plans or who planned house building preferred wood to other materials more than those visitors who planned to buy a house (**). Visitors who planned to build or buy expensive houses preferred stone, compared with visitors who planned budget houses (***). Visitors who planned to build a house had the worst image of brick and visitors who had no construction plans had the best image. However, the suitability of wood for construction was considered good or excellent by all the groups.

The most significant factors affecting the choice of decoration materials in construction were appearance (4.5), ease of maintenance (4.4), price (4.0) and ease of installation and use (3.7). Respondents under 40 years old considered price to be a more important factor than respondents over 40 years old (*). Those who had no construction plans considered price and appearance to be more important factors than those who had plans (*). Respondents living in one-family houses considered ease of maintenance as more important than those who lived in blocks of flats (*).

Opinions on the characteristics of Finnish enterprises and products were found out in the enquiry. On a scale of 1–5, where 1 describes the worst quality and 5 the best, Finnish products received a good valuation in quality (4.6) and the ease of maintenance of houses (4.4). Also, Finnish enterprises were evaluated as reliable (4.5).

The results differed between the age groups. Respondents under 40 years old had a worse image of Finnish products than older respondents: the quality of Finnish products (***), the reliability of enterprises (*) and the ease of houses' maintenance were considered worse among respondents under 40 years old than in the group of over 40 year olds. On the other hand, respondents over 40 years old gave a rather high estimation in all their answers.

The housing fair visitors were asked to give a paired comparison in three price groups if they chose a Finnish-style or Russian-style house. Finnish house types were mostly chosen from housing fair participant collections (Honkarakenne, Finndomo and Jukka-Talo) and Russian models from house catalogues. The aim was to choose Russian models so that their colour and size would correspond to Finnish models. The distribution of preferences between the Finnish and the Russian solutions was:

– in the budget class Finndomo's Omatalo 91-9-I (91%) vs. a traditional Russian house (9%)
– in the middle price class Jukka-talo City 126-1 (68%) vs. a traditional Russian house (32%)
– in the expensive class the Honka model (50%) vs. a traditional Russian house (50%)

There were no statistically significant differences between the clustered consumer groups (age groups, occupational groups) measured by the χ^2 test in different product segments. The majority of customers preferred Finnish-style houses in the budget and middle price classes but the opinions were divided equally where the most expensive price class was concerned.

Consumers were asked their three most important dimensions behind their residence preferences. The selections were valued so that every respondent's most important factor was given 3 points, the second most important 2 points and the third most important 1 point (the Borda count method). The points were counted up and the results are the following (Figure 4.4):

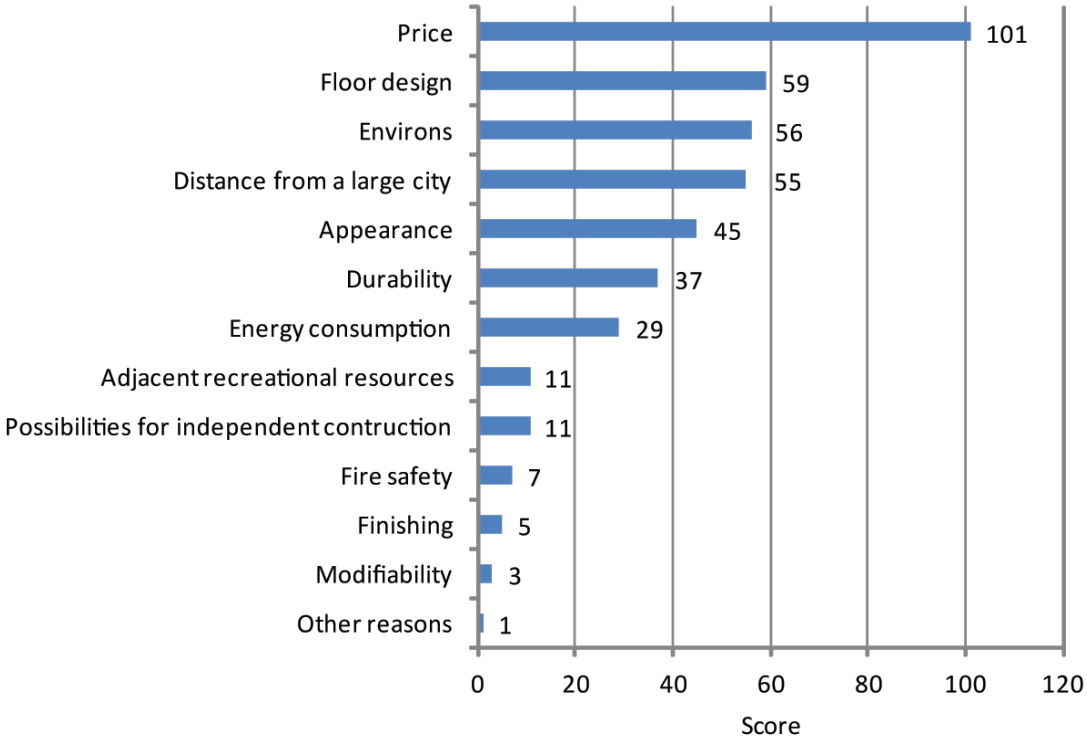

Figure 4.4 The most important dimensions behind the residence preferences.

Price proved to be by far the most important selection criteria. Floor design, environs and distance from a large city were the next most important factors. Also, appearance, durability and energy consumption had moderate significance. Conversely, possibilities for independent construction, adjacent recreational resources, fire safety, finishing and modifiability aroused much less interest.

4.4 Trade Patterns in Russian Markets

4.4.1 Alternative Paths to International Business

The current knowledge from international business is the starting point for the preparation of new international business activities. The prior knowledge base will be rationally transferred to the new planning. The quality and extent of the necessary transaction activities in the internal business knowledge also depend on the objectives in the new step. It is a task of mobilizing the current internal knowledge resources and building up new strategic alliances (Hyder & Abraha 2003).

There are two basic alternatives available for the new strategic planning:

1) Multinational: taking the special requirements of the target country and new business culture into the core of the strategic planning
2) Global: meaning the expansive adaptation of the current international business model and the products and services of the enterprise to the new market.

It is becoming increasingly important to complement the international business model of the enterprise with the market-specific qualification requirements when entering new business cultures (Hyder & Abraha 2003). The mainstream global business model utilizes universal CAs in the products and services. They are frequently inadequate to be fully applicable in the new markets. The attitudes and preferences initiating from patriotism frequently diminish the CAs based on the qualities of the products and services. We can identify the alterative paths for the use of CAs in an enterprise enhancing their international business activities. International orientation is a mindset among the CEOs. Extensive international orientation in business can be based on global market products or those utilizing national specialities. Cultural dependence is a production and institutional issue. Product acceptance or the stage of national technical capability can imply extensive cultural dependence.

Table 4.1 Categories for business internationalization (Marttila & Ollonqvist 2010)

		Business internationalization	
		low	high
Cultural dependence of products	high	1) home market actors	4) internationally established actors with home culture-based products and concepts
	low	2) global product subcontractors	3) international market-oriented business portfolio

The global and national culture qualifications of products and services are considered substitutes or complements (Table 4.1). International business orientation and national culture dependence indicate substituting qualifications between those dimensions in the markets concerned. The same is true in the opposite case. There are especially SMEs that have both limited qualification for international market product requirements and a limited business knowledge base among the CEOs. Low global orientation with high national culture connections implies CAs utilizing national preferences in the market. High global and high national culture dependence imply their complementarity in global markets concerning making the global CAs valid for those markets. IKEA as a global retailer is a well-known example of this approach. Low global business internationalization with low national culture dependence is typical among global business subcontractors with high technical skills in production.

The starting point for the consideration based on Table 4.1 can be the corner characterized by low business internationalization and high national culture preferences, meaning markets isolated from international competition. Enterprises operating with strong culture-based CAs can have high barriers to entry into international markets. Normally these barriers are effective with respect to the global market and foreign national culture CAs. The only direct way for these enterprises to engage in international business activities is to export their national specific CAs into the new markets.

There are at least two alternative paths towards global business CAs. An enterprise can adapt its national CAs to countries with a similar business culture and gradually adapt themselves to the global business ($1 \rightarrow 3 \rightarrow 4$). The second route passes through globalized product development and the adaptation to specific national business cultures ($2 \rightarrow 3 \rightarrow 4$). The major difference between the two paths for an individual enterprise concerns the ways the enterprise aims to cross over the business culture barriers. Enterprises following the globalization alternative aim

for universal products whereas enterprises with the cultural adaptation approach develop their business to be applicable to the requirements of the new business culture (Marttila & Ollonqvist 2010).

International business entry implies changes on all the organizational levels of an enterprise but especially among the CEOs (de Witt and Meyer 2005). The challenges for change are also valid when planning business activities in the Russian construction cluster (Bek & Vladimirova 2010). Filinov (2010) separates the hard features (documented procedures, rules and regulations) and soft features (the attitudes and preferences of managers) characterizing a decision-making culture. The dominant features can be traced behind the effectiveness of managerial procedures because the style and patterns mediate the influence of all the other factors. The style of decision making is among the elements of management style in line with other elements such as communication style. Moreover, all these are highly dependent and may cause problems if there is an insufficient fit among them.

4.4.2 Alternatives to Internationalization or Market-Specific Modes

There are pros and cons related to the basic mode variants available to Finnish enterprises when trading with Russian partners. The major variants, that of a globalized trade pattern or that of a Russian business culture assimilated pattern, are discussed in this chapter. They are used later when evaluating the potential of the alternatives available to construction carpentry and other woodworking industry enterprises when trading with Russian construction networks. There are also strong national specialities in the construction business in Russia.

The interview findings of Tretyak et al. (2010) have identified three principle modes of entry used by Finnish companies when entering into the Russian construction markets:
- greenfield entry by establishing a wholly owned Russian subsidiary
- brownfield entry by purchasing an existing Russian company or
- establishing an affiliate relationship with an existing Russian company.

In the cases of outright purchases, the Finnish company should be able to implement all of its policies without interference from other owners. In the case of an affiliate relationship, the contractual relationship would dictate the degrees of freedom to require management or process changes (Tretyak et al. 2010).

According to Marttila and Ollonqvist (2010), there are major differences in strategic orientation among Finnish companies and the choice between the internationalization mode or the Russian business pattern mode is a question of the CAs available. The business model choice is also related to the time dimension adopted in the strategy choice. The major choice concerns the temporary business mode or sequential business development. The third choice concerns the partnerships: is the enterprise going to the Russian markets alone or will it become a member of a network with Finnish or Russian enterprises?

Profitable growth and a permanent position in Russian markets are strategic targets for most of the Finnish companies. On the other hand, many enterprises try to transform exports from Finland to local manufacturing in Russia. In some companies the plans are very short term. In many SMEs the aim is to retain business in Russia on a low level (Marttila & Ollonqvist 2010). There are four major factors separating the strategic actions in Russian business:
- adaptation to economic fluctuation when domestic markets weaken
- temporary exports to Russia to substitute weakening demand in third countries

- effort to find permanent new markets to compensate for domestic markets' saturation
- effort to find business potential for special products.

It has also been noticed that even large companies in the forest sector sometimes had only short-term plans and consequent strategies in their Russian business. In many cases, activities in Russia were still in the pilot and reference search phase.

Investments in production capacity and the consequent uprising of the degree of processing was a strategic goal for almost all of the Finnish companies. Many of the companies aimed towards the special product manufacturer position in Russia. In strategic questions, three main categories were found (Marttila & Ollonqvist 2010):

- temporary exports to Russia (non-strategic market)
- stable special product exports to Russia (strategic market)
- local business establishment (strategic market)

According to Narva's (2010) findings, the majority of SMEs follow the first strategy without proactive marketing research. Then the export business is based on the identified immediate market possibilities. Those temporary opportunities are frequently open on neighbourhood markets, allowing business without strategic considerations. The rational strategy target would be to establish a subsidiary company or joint venture in Russia.

4.4.3 Long-Run Business Scenarios in Russia

There is a recent multidisciplinary professional scenario regarding the economic prospect in Russia up to 2030 (Kuusi et al. 2010). This report updates the alternative potential development paths to 2015 characterizing the visions of the future Russian economy (Kuusi et al. 2007) in chapter 4.5. The scenario, which is based on the diversified industrial structure and strong knowledge base among the staff, can be considered the most relevant as the reference for the evaluation of the findings and outputs of this research.

The resource base in the Russian national economy is strong enough for the country to become an important player in the global markets of knowledge-based products and services. There are structural development conditions for that Russian development scenario to be fulfilled: improved energy efficiency, added value in oil export products, imports substituting production technology investments and the export of these products. The response from the Federal Government to these challenges has been constructive and even proactive where ICT technology and its solutions are concerned. The development approach has been widespread, covering e-commerce, e-education and e-government. Addition investments in SDI knowledge creation for high-technology investments have been proactive (Kuusi et al. 2007).

Russian economic policy makers are searching for solutions to benefit from investment-induced economic growth. Substituting investments with new technology for the current capacity by the international enterprises is an option. These options have been challenged by the strong and increasing exchange rate of the rouble along with some import customs. There has been a fundamental shift in consumer demand from commodities to services and the technological requirements there support a solution based on foreign technologies (Lainela 2008).

The modes and speed of capital investments are crucial concerning the stage of economic development in Russia. There were good prospects for foreign investments in the early 2000s

when the real rate of growth for the GNP was high. The economic recession in 2008 downgraded this development and the future propensity of foreign enterprises to invest in Russia remains to be seen. Russian markets still have good potential for Finnish enterprises (Sutela 2010).

International business activities utilize the CAs of the enterprise that are either already available internally or yet to be developed. These CAs can be on temporary basis or part of the long-run strategic development. The basic choice in strategy development concerns either the new use of the internalization pattern of the enterprise or the intake of CAs tailored specifically to the Russian market.

The fundamental issues concern the key business knowledge base on the planned exports and resources to be used in the Russian markets. The knowledge base must already be available in the enterprise when the expanded internationalization approach is used and there are normally only minor complementary needs. Proactive training programmes for expatriates and other investments in new knowledge are frequent when the approach based on the adaptation to Russian business culture is applied. The choice between the alternatives greatly depends on the objectives related to the business strategy applied (see strategy preparation in Pedersen & Petersen 1998).

Enterprises that are active in international trade normally have the necessary knowledge to adapt their temporary business activities to the new market requirements whereas when a permanent market presence and production investments in the new country are aimed for there is a need for investment in new market-specific knowledge.

Identification and analyses of the objectives of an enterprise are an essential part of the strategy choices. Enterprises searching for a better use of their domestic economies of scale (enhanced use of the current capacity) tend to search for the temporary export demand for their current products and services. The enterprises on the other hand that have products and services with unique properties using the economies of scope can benefit by adapting their CAs to the market-specific requirements. This adaptation frequently implies changes and causes transaction costs that make the objective of permanent market attendance rational (Pedersen & Petersen 1998).

There are three basic categories for the internationalization objectives behind business internationalization (Narva 2010):

a) market area enhancement with the current products and services using the existing CAs of the products in the new market area
b) search for new markets substituting the deteriorating CAs in the existing markets with the current products and services
c) search for new markets with modified or totally new products and services

There is frequently a need for new knowledge investments among the enterprises entering into a new business culture (Ahokangas & Pihkala 2002). The latter in the Russian market context concerns the role and tasks of expatriates. Temporary market activities can be managed by using sales agents or by participating in the export cooperation arranged by the Russian trade specialists (see Vento 2009). The strategic choice of a permanent and possibly enhancing presence in the new markets implies systematic training and recruiting for the expatriates (Hollensen 2001).

There are currently alternative ways to arrange the external expertise into the temporary business activities in the Russian markets (Karesto 2009). A permanent presence in the Russian markets implies systematic expatriate training in the Russian business culture (Tolvanen 2009). This strategic choice is essential if the objective implies the establishment of a Russian enterprise OOO or ZAO. The current challenge faced by the Finnish enterprises concerns the limited expert training supply in Finland (Tolvanen 2009).

Market segmentation polarises enterprises: for some enterprises the primary target area is the Saint Petersburg and Moscow region. On the other hand some enterprises consider regions with insignificant competition interesting (Oinonen 2008).

4.4.4 Alternative Structures for Establishing Business in Russia

There are alternative ways available for Finnish enterprises to establish permanent business activities in Russia. The choice set ranges from a going concern purchase to a new investment. Uncertainty always exists concerning the legitimate social obligations in a going enterprise that must be taken into consideration when using this approach for the establishment (Hirvensalo & Lausala 2001). The network solutions related to delivery arrangement in the up- and downstream of the value chain are also topics to be evaluated proactively in the investment decision process. The outsourcing and complementary partnership decisions concerning the prospective successful business model implementation are crucial.

The business infrastructure in Russia has many competitive and institutional structures that fundamentally differ from those applied in Finland. These differences become visible one by one if the enterprise follows step-by-step business development (Kaasalainen 2010). The management of a representative office or business with a Russian agency is straightforward. Taxation is related only to the direct business turnover and the liabilities from the representative office are totally due to the Finnish company.

The options for organizing business in Russia are:

- own enterprise
- cooperation network
- joint venture with Russian partners.

The normal continuum for internationalization actions is to found a sales enterprise. This might have an effect on Southeastern Finland if Russian enterprises found units there. The main reasons for moving manufacturing to Russia are usually an effort to lower manufacturing costs (Marttila & Ollonqvist 2010). In countries with an inexpensive cost level the benefits of outsourcing operations include the lowering of product costs and decreasing country risk.

Networks and other joint interest activities among Russian and Finnish enterprises have speeded up the adoption of new business concepts in Russian economic transition (Jormanainen & Salmi 2010). Their role regarding the remaining references and extensive dissemination is to come.

Business network memberships frequently provide more profitable business solutions than subcontracting. Network membership potential supports a business strategy utilizing gradual assimilation that consists of the establishment of a joint interest or sole owned enterprise in Russia. Empirical findings from the export networks of SMEs in the Saint Petersburg area provide evidence of the validity of this approach in Russia (Vento 2009). A subsidiary in

Russia, substituting for an agent or network partnership, is a valid second step in the gradual internationalization strategy (Karesto 2009). Investment in production capacity is the typical third step of gradual internationalization (Johanson & Vahlne 1977, Hyder & Abraha 2003). This normally means a qualitative step in management if the formal company status is changed on this occasion.

There are two basic alternatives for the establishment of a company in Russia, OOO (*Obshchestvo s Ogranitsennoy Otvetstvennostyu*) or OAO/ZAO (*Otkrytoye/Zakrytoye Aktsionernoye Obshchestvo*). A company in Russia implies ownership and management status transfers and organizational decisions are required accordingly (Marttila & Ollonqvist 2008). However, company registration in Russia is still complex and involves many steps (Ivanova et al. 2006). A limited liability company OOO is a popular Russian enterprise ownership mode both among natives and among foreigners. The major advantage of this model relates to the freedom from formal ownership registration with the taxation authorities (Nykänen 2007). Ownership can be changed without complicated registration processes. Companies with an OOO structure provide strong management participation to shareholders, thus restricting the decision autonomy of CEOs.

The other company modes, OAO/ZAO, are typically suitable for large international enterprises. Their foreign business implies a strong and powerful position for the CEOs. Their decision autonomy is essential to allow fast adaptation to market shifts. The major disadvantage in the OAO/ZAO mode is that the required updated ownership lists and their formal registration are not a high threshold to large international enterprises. The liabilities of the corporation also enforce shareholders and CEOs in bankruptcy and insolvency cases do not differ greatly between OOO, OAO and ZAO modes (Kaasalainen 2010).

The OOO ownership mode (having joint features with GmbH in Germany) is not in use in Finland. This feature makes it challenging where Finnish–Russian co-ownership is concerned, as do the financing arrangements and related risks when participating in Russian construction networks (Ollus & Torvalds 2005).

The current Russian residential construction business in metropolis areas favours the accomplishment of large regional projects (Herranen et al. 2009). The major developer of a project typically charges from the comprehensive construction management that also covers relevant infrastructure construction (electricity, water, sanitation, road network and plantations). The full delivery and sometimes also on-site assembly are frequently used business models for timber module and component subcontractors. These projects normally imply a Russian enterprise, the real estate developer or construction enterprise, as the project locomotive (Niittymäki et al. 2010). The development interests of Federal and Regional Government in enhancing construction knowledge tend to improve the business options among the Finnish timber construction industry enterprises. However, the latter will be due to the establishment of permanent business activities to Russia (Karesto 2009).

Organizational structures in Russian enterprises together with employee attitudes have been noticed to create barriers to the adoption of positive new elements from joint interest enterprises (Jormanainen & Salmi 2010). These findings support the establishment of totally new joint interest enterprises substituting the old structures (Jormanainen 2010).

The research findings of Jormanainen (2010) report that the adoption of new production processes and investments in new knowledge have been among the most successful forms of

implementation used by joint interest companies. The positive attitudes among the Russian CEOs to modern technology and equipment but at the same time the shortages of technical personnel at all levels of organizations and high-quality equipment suppliers as well as the inability to provide services among the R&D organizations can be traced to the background (Ivanova et al. 2006). The creation of permanent qualified staff is a big challenge to foreign enterprises. There is a constant shortage of qualified employees, making the transaction costs from labour turnover high (Tolvanen 2009).

4.4.5 Options for Business Models in Russian Residential Construction

A multinational strategy is popular among foreign enterprises in the Russian construction cluster business in accordance with Bek and Vladimirova's (2010) research findings. In their report the strategic process in the enterprises is influenced by a number of factors, such as institutional and socio-political factors as well as business-sector specifics and the national culture. Strong intra-firm global business knowledge can become the starting point but has also sometimes been a source of biased market entrances (e.g. Tetra Pak's investment in Svetogorsk (Hirvensalo & Lausala 2001)). A strong knowledge base in global business can create a good starting point for the Russian business strategy but can frequently imply relevant complementary recruitment to be able to adapt to the regional product and service requirements. Russian legislation and business practices do not support the copied domestic strategies of the foreign enterprises.

The partnership models that are becoming usual in some countries are not easy to apply in Russian markets. Traditional construction enterprises and related networks apply the project development model in the Russian construction industry, thus supporting case-specific modes and parallel project presence (Bek & Vladimirova 2010). That structure favours employees who can manage functional mobility, intercompany mobility as well as continuously changing combinations of structures. Therefore, temporary positioning and changing roles have accentuated leadership competencies and the abilities to apply them in temporary teams. Krupskaya et al. (2009) consider human resource management, identifying cultural differences and understanding their impacts proactively as highly important in engaging in successful business in Russian markets. Settles (2009) identifies the differences between Finnish and Russian managers by using Garvin et al.'s (2008) measures of success factors when implementing organizational changes.

The measured differences between Russia and Finland in Hofstede's estimates of country-level culture support the findings of differences concerning intra-firm learning environment support. Managers in Finland, according to Settles (2009), tend to support factors giving high scores on safety and new idea openness indicators in the learning environment as well as on information collection, education and training, and information transfer. Leadership support of employee learning achieved high ratings throughout. However, the empirical findings of Settles (2009) indicate that Finnish companies operating in Russia do not replicate their domestic models in Russia. The appreciation of difference measures achieved high scores among the Russian CEOs concerning the learning environment reinforcement (Settles 2009).

The specific article in the end of Chapter 4.4.7 provides some challenges for business cultures based on leadership and management, respectively. Individual and collective learning require specific management, thus providing the only way to build knowledge assets and generate innovations. A successful Finnish–Russian team and network formation require the integration of competencies, skills and technologies to achieve competitive advantages for the enterprises in the network.

4.4.6 Managerial Decision Making on Cooperation and Partnerships

There is always a need for intensive managerial activities covering searching, comparisons and tender between the formulated alternatives but also supervision and control of the feasibility of the applied solutions. These activities cause both case-specific and transaction costs, respectively (Williamson 1981). The transaction cost approach provides methods and tools to minimize the sum of operating and transaction costs as a basis for the decision making. The fundamental task among the CEOs is to identify the current tangible and intangible resources necessary to implement the internationalization tasks. Entrance decisions imply core intra-firm resource mobilization (Barney 1991). The business economic research literature puts effort into innovative ways of using the input resources in the enterprise (Prahalad & Hamel 1990). There are weaknesses in this approach due to the evaluation of the resources in isolation from the competitive infrastructure context (see e.g. Foss 1998). The strategic positioning of the enterprise is important when developing a strategy to enter a new market. There are numerous channels to enhance the CAs of the enterprise by changing pricing, improving product differentiation, creating new distribution channels or exploiting the relationships with the suppliers.

Competitive positioning can be accomplished by using the five-force model of Porter covering market competition, threats from substitute products, the monopsony power of the buyers and the market power of the suppliers in the business network (Porter 1980). The power of the members in the value network can support or impede the positioning of the enterprise concerned. The threat from substitute products comes from other industries and value chains through positive cross-price elasticity between the products. An increase in the power of buyers biases the competitive win-win solution created in competitive markets. Strong buyer power increases the monopsony bias through the extra profits of the buyers at the expense of the selling enterprises. Supplier power to the producing enterprise comes from raw material deliverers, labour unions and the component suppliers. This requirement leads to buyer–supplier relationships between the industry and the firms that provide it with the raw materials used to create products. Powerful suppliers create a monopoly bias in business relationships.

Recent research findings from the Russian construction cluster confirm the importance of market-specific social capital screening (business culture knowledge among the potential expatriates, both documented and tacit dimensions) as part of the strategic positioning of the Finnish enterprises (Tolvanen 2009, Niittymäki et al. 2010). The proactive evaluation of the challenges related to the differences in the managerial patterns between Russian enterprises and Finnish enterprises is important concerning the establishment of an affiliate in Russia (Seppälä 2002, Filinov et al. 2009, Tolvanen 2009).

Ivanova et al. (2006) notice common interests and goals among Finnish and Russian partner enterprises in their multisectoral research among the Finnish enterprises entering Russian markets as well as similar intra-firm appreciations together with financial soundness, reliability and credibility, also with respect to public authorities. Russian enterprises are normally accustomed to partnership orientation but both Finnish and Russian partners must fulfil environmental and quality criteria at the minimum threshold. The targets and requirements have been on the agenda among the Finnish enterprises in their search for Russian enterprise partners and the same criteria are valid in the search for new cooperation partners (Hernesniemi et al. 2005, Ivanova et al. 2006). Russian natives as employees are frequently necessary to meet the acquired competence for contract requirements (Hernesniemi et al. 2005).

Concerning the commercial stage of market entrance, the major modes, a representative office or business with a Russian agency, provide straightforward partnerships. Taxation is related only to the direct business turnover and liabilities from the representative office are totally due to the Finnish company. However, the criteria for the cooperation partners differ between product trade and production cooperation partner searches. The track records in engineering and complementary products with overall competitive advantages in the portfolio are concerned in production cooperation searches (Ivanova et al. 2006). Investment in production capacity, the third step in the gradual internationalization pattern, normally means a qualitative step in CEO requirements if the formal company status is changed on this occasion. However, the criteria for the cooperation partners differ between product trade or production cooperation partner searches (Johanson & Vahlne 1977, Hyder & Abraha 2003).

There are also differences concerning the opportunities provided especially for SMEs to settle into business parks and use their service supply. The price level of those services is currently high, especially in metropolises, making it a less interesting alternative compared with the business rings discussed in Chapter 4.4.4 above (Ivanova et al. 2006). Finnish enterprises imply contract reliability concerning payment and trade, conducting time schedules. In addition the service enterprises highly appreciate administrative transparency as a criterion for cooperation (Ivanova et al. 2006).

4.4.7 Initial Business in a Russian Market with or without Partnerships

Functional and reliable business cooperation is one of the most important factors when operating in Russia (Marttila & Ollonqvist 2010). The partner search is a crucial step in starting cooperation (Ivanova et al. 2006). However, finding a reliable partner is often hard and risky (Ivanova et al. 2006, Marttila & Ollonqvist 2010) and requires careful background investigations (Hernesniemi et al. 2005). In Marttila and Ollonqvist's survey (2010), only those Finnish enterprises that operate in the upstream of the value chain have used Russian subcontractors. A sufficient amount of subcontractors is a prerequisite for ensuring reliable delivery of goods. Subcontractor turnover is typical, especially in big companies (Marttila & Ollonqvist 2010). According to Narva (2010), many expert organizations are often careful in establishing cooperation of joint venture. According to Ivanova et al. (2006) there are a lot of barriers to starting cooperation related to a lack of information and language skills.

Ivanova et al. (2006) separate two different Finnish–Russian cooperation forms: cooperation in production and cooperation in marketing. It is possible either to have both simultaneously or to start with marketing cooperation and continue to a deeper relation in joint production. Sales growth is usually the main motive for cooperation. For production companies lower wages and the importance of local presence have also been mentioned.

The cooperation forms are separable according to Marttila & Ollonqvist's (2010) empirical findings:

- procurement of complementary building elements (to the upstream of the value chain)
- installation service company (partner)
- companies that communicate with local sides (partners).

Manufacturing companies have gained many advantages from cooperation with Russians (Ivanova et al. 2006). According to Marttila and Ollonqvist (2010), in the value chain downstream subcontracting is currently usually strictly in a company's own hands. According to some enterprises, Finland should create export networks that could answer for large site

development objects and the whole value chain. According to one respondent, an export chain is hard to control because Finnish companies lack the ability to cooperate. Ivanova et al. (2006) mention that the main reasons for cooperation among Russian companies are the Finnish technology and experience.

Punctuality and reliability are the most important factors in long-term cooperation for most enterprises (Marttila & Ollonqvist 2010). In addition to these, Ivanova et al. (2006) mention financial soundness, long existence, credibility and obedience to the law. In starting cooperation the following topics were mentioned (Marttila & Ollonqvist 2010):

- coincidence
- references and confidence based on experience
- contacts of own network.

Ivanova et al. (2006) summarize the following findings related to views of cooperation among Finnish and Russian companies (Table 4.2):

Table 4.2 Views of Finnish and Russian companies on cooperation (cited from Ivanova et al. 2006)

	Finnish companies	**Russian companies**
Motives	Market potential	Access to resources and know-how
Partner criteria	Company performance	Company reputation and personal relationships
Barriers	Lack of resources	Access to information, language
Problems between partners	No major problems	Different mindsets
Problems of Russian business environment	Legislation, administrative control	Lack of financing, rising operation costs, corruption

According to the survey, Finnish and Russian enterprises have fairly different views on some questions (Ivanova et al. 2006). Thus, the challenge in cooperation implementation is to fulfil both partners' needs.

According to Jormanainen and Salmi (2010), there are several obstacles to joint ventures that slow down the appliance of common know-how in parental companies in Russia. Three of them were recognized as essential:

- organizational structures from Soviet times, which are considered unsuitable for the current situation
- employees' attitudes
- weakness in workings of data management.

Guidance and public service organization exploitation vary greatly between enterprises. Companies with a clear strategic goal in internationalization exploit expert help more than others. Among those enterprises the ability to utilize the collected information is also high (Narva 2010). In cooperation different goals might cause some problems. According to Ivanova et al. (2006), Finns would usually like to develop the company with profits and Russians more often prefer to share the profits more quickly between the owners. However, more and more Russian companies have a longer perspective and business conditions in Russia are developing in a good direction from the point of view of Finnish companies.

There are also several support organizations that promote cooperation for local and foreign enterprises working in Saint Petersburg and Leningrad Oblast. For example, the fund “Retsept” (http://www.recept.813.ru, Leningradski oblastnoi ... 2010) actively tries to enhance cooperation between different-sized enterprises (Ivanova et al. 2006).

The specialized financing company Finnvera allocates money to internationalization if the target is to create production cooperation with a Russian company and the new business requires remarkable financial investments or transferring know-how from the Finnish side or if a project is locally significant (Marttila & Ollonqvist 2008).

In some cases changed opinions of Russian enterprises towards cooperation emerge. According to Finnish suppliers, price was previously the only concluding factor, but nowadays enterprises in the upstream of the value chain also pay attention to delivery reliability. Many Russian answers are eager to cooperate but there is often more willingness than capability.

Personal relations play a key role in Russia (Marttila & Ollonqvist 2008, Tolvanen 2009). The importance of personal contacts is a consequence of the unreliable operational environment. Trust is earned through experiences and personal relations (Marttila & Ollonqvist 2008). The better the relations with partners in cooperation are, the more there are possibilities for remote contact such as by phone and e-mail (Fey et al. 2004).

Cultural Differences between Russian and Finnish Forest Sector Actors

Together with language barriers one important determinant that affects the intercourse between the trading partners from different nations in international business operations is cultural differences. Understanding these differences and partners' ways of thinking and actions provides tools for better business planning as well as daily routines between the participants in business. Even though Finland and Russia have a long history in roundwood trade as well as in joint construction activity, it was not until the collapse of the Soviet Union in 1991 that the trade and business between the partners became market orientated. Then, the new situation brought challenges to both sides of the border.

The Finnish forest companies, who were used to the barter-trade type of business, had to adopt market-based roundwood trade from leased forest holdings in Russia. Also, they started to construct procurement organizations and pilot sawmills in Russia, in a totally different market environment. The business practices of the Russian forest management units and the myriad of middlemen specializing in providing roundwood were typically inherited from the Soviet era and centuries-old traditions of Russian culture. Therefore, their knowledge of market-orientated business, administration and marketing was highly limited. Thus, the early years of business activity at the beginning of the 1990s between the Russian and the Finnish forest companies and actors were full of misunderstandings and different practices due to the different cultures, languages, religions and economic and social systems.

As the years passed the Russian and Finnish trading partners gradually became accustomed to each other's way of thinking, habits, manners and mindsets, which mutually helped their daily dealings. While many projects and joint ventures are still active between the Russian and the Finnish forest sectors, the customs tariff programme for roundwood exports set by the Russian Federation to promote the domestic forest industry and encourage foreign investments has diminished the traded roundwood volumes fundamentally. Also, the closures of capacities in Finland have diminished the need for roundwood. In 2005, the record year of imports, the total roundwood imports (including chips) from Russia to Finland amounted to 16 million cubic metres, while in 2009 the corresponding volume was less than 4 million cubic metres. Recently, however, under the WTO negotiations, the Russian Federation announced that the custom duties will be partly decreased as part of the membership. When fulfilling this deregulation, it is likely that the roundwood trade between Russian and Finland – at least to some extent – will increase again. Then, the questions concerning cultural differences will again be relevant and actual.

Cultural differences can be assessed according to Hofstede's (2010) 5-point classification. Although this classification is rather artificial it consists of psychological dimensions or value constructs that can be used to describe specific national or organizational cultures (Vinokurova et al. 2009). The Power Distance Index (PDI) gives a measure of how unequally power is distributed in a society or in an organization, and how this distribution is perceived and accepted by the less powerful members. The PDI is defined from below, not from above. In organizations where the PDI is high, the power relations are paternalistic, autocratic and less democratic. According to this measure, Russia (index 93) is a more unequal society than Finland (index 33). Individualism (IDV) in business culture measures how the responsibilities are divided across the members of the organization. In an individualistic culture the responsibilities are strictly defined for one person whereas in collective cultures a group can be responsible as a whole. Finland (index 63) can be seen as a more individualistic society than Russia (index 39).

Masculinity (MAS) gives a measure of how the management and distribution of work are organized. In societies and organizations where masculinity is high the management is hierarchic and highly restricted, typically implying a vertical organization and decision-making structure. In less masculine organizations (also called feminine organizations) the management is based more on delegation and the organization structure is rather horizontal. Russia (index 36) is a more masculine society than Finland (index 26). The Uncertainty Avoidance Index

(UAI) deals with a society's or organization's tolerance of uncertainty and ambiguity. Uncertainty-avoiding cultures try to minimize uncertainty by strict laws and rules, safety and security measures as well as institutions that monitor and enforce the compliance with the laws. In uncertainty-avoiding cultures, where the index value is high, people tend to be more emotional. In cultures that accept pluralism the index value is low. The index value of UAI for Russia is 95, whereas the value for Finland is 59. Long-term orientation (LTO) refers to cultures where long-run planning, saving and hierarchy are appreciated. In short-term-orientated cultures respect of tradition, fulfilling social obligations and protecting one's face are applied. According to this measure, Finland (index value 41) and Russia (index value 48) are not far away from each other.

In addition to these differences, there are other cultural dissimilarities that can hinder understanding, communication and ways of working between the business partners. One important culture-related difference is the understanding of the time concept. In synchronic cultures, such as Russia, it is common for people to do several things at a time, whereas in sequential cultures, such as Finland, the tendency is to do only one thing at a time. In sequential cultures time is considered as linear, whereas in synchronic cultures time has neither a beginning nor an end. For daily interaction this difference matters because projects with strict deadlines – as well as a joined-in-time way of thinking – are typical of sequential cultures and organizations, whereas in synchronic cultures, the process of doing itself is more important than the deadlines.

The questionnaire survey concerning roundwood trade between Russia and Finland tried to reveal whether there are cultural-difference-based obstacles. The study proved that cultural-induced differences do exist to some extent in such subject matters as the notions of time, time horizons, how time is managed and the quality of roundwood as well as in the distribution of power and responsibilities. According to the results, the responsibility for decision making in Russian roundwood organizations was typically slightly more concentrated on a single person than in Finland. However, the distribution of answers between the Russian and the Finnish managers was not as wide as expected according to the theoretical cultural background. Perhaps this result can be explained by the size and structure of the companies. In the Finnish forest companies, especially in the large international ones, there are typically only a few persons in a special department who are responsible for these issues, while in the small Russian companies and amongst the middlemen the division of work is not as strict.

Similar small differences in answers between Finnish managers and Russian managers were also found concerning the attitudes towards the quality of roundwood as well as experiences of their trading partner's features. Finns typically stated the quality of roundwood to be very important while Russian's attitudes were slightly milder. However, as a whole, these differences as well as language barriers were considered of minor importance in business relations. In general, the personal and unofficial contacts on both sides of the border were seen as highly important for running the daily business. Both sides also emphasized that many daily issues in roundwood trade depend strongly on the state of affairs, especially in Russia, such as rapid changes in customs policy and taxation, which hinder the long-term planning and challenge the time and quality management. Thus, sudden changes in the market environment surpass the possible hindrances arising from different cultural backgrounds. Partly similar culture-based obstacles were also found in a study concerning construction activity in Russia between Finnish and Russian constructors.

4.5 Russian Business Potential – An Overview

This research has been carried out to answer the questions related to consumer preferences in wood construction markets in Russia and alternative penetration models in Russian markets. The aim has been to describe the current situation, find good practices among Finnish timber construction and other woodworking industries and identify their potential economic impacts on Finland.

Russian economic growth has been rapid even though recessionary periods in 1998 and 2008 were endured. Residential construction has been one of the fastest-growing business sectors in the Russian economy and there are several ongoing programmes related to the development of wood construction in Russia. There are also a number of CAs available for Finnish enterprises in construction value networks.

This report has proved that there are clear business opportunities in construction markets in Saint Petersburg for construction modules, components and other wood products. There is a great variation in international business orientation among Finnish companies. Besides, among internationalized Finnish enterprises there are only a few that concentrate on Russian markets. Most of them need new business models in Russian markets. This is caused by the large size of building contracts in Russia compared with those in Finland and by the size and the dispersion of business networks being wide.

The tendency in Russia has been to promote local manufacturing and enhance the use of forest resources within Russia. On the other hand, cost competitiveness has acquired increasing significance since competition on Russian markets in several demand segments has increased.

In the present conditions Finnish companies have difficulties in gaining CAs with their products based on the production costs against Russian companies. The factors that will weaken Russian companies' price competitiveness have been discussed above. These are caused by the target in Russian economic policy in which Russian companies should create added value (Sutela 2008). In Finland the CAs of the wood product industry will probably be based on conceptualized products and services that do not have direct competitors on Russian markets.

There are many wild cards in the value chains of construction sites in Russia. Finnish enterprises might meet corruption related to the permitted building volumes, town planning and municipal engineering networks. President Medvedev has paid attention to legislation reform needs related to the regulation of customs, register offices and courts of justice personnel (Kuusi et al. 2010). Because of the significant economic interests related to town planning and the reformation of courts of justice the reform may take time.

4.5.1 Strategic Planning in Russian Markets

So far, the participation of Finnish construction companies in site development projects in Russia has been on a small scale. Successful business activities in Russian markets require long-term strategic planning and adequate resources. For successful penetration of Russian markets, Finnish companies have to identify the relevant demand segment and focus on the relevant potential value chain positioning (Marttila & Ollonqvist 2010). The method of acquiring price and cost values depends on the way value creation is arranged through the offering of the

enterprise and the composition of the value chain. The magnitudes and geographical dimensions of Russian residential construction markets vary greatly, which has to be taken into account.

The position of Russian activities has to be determined in the whole business strategy of an enterprise. There are several possibilities for business activities. The basic alternatives in the time dimension are:

a) a temporary project by the project approach, regular contracts
b) individual subcontracts
c) series deliveries and
d) partner positioning.

Temporary earning is a common way for SMEs to start their Russian market activities. This often leads to deeper actions. However, according to Narva (2010), market research is often omitted and the reasons for internationalization might be quite incautious. Thus, in many cases better market research could strengthen the basis of internationalization. Successful permanent business actions often require strong experience in the Russian business environment (Marttila & Ollonqvist 2010, Narva 2010). Expanding the business requires systematic mapping of the operational environment and strategic choices for short- and long-term actions.

Screening value creation alternatives requires a comparison between position alternatives in the value chain. The unit costs of production input factors have to be determined in Saint Petersburg and Leningrad Oblast and in Finland. These are strictly related to the choices in the business strategy.

Marttila and Ollonqvist (2010) defined two main strategic models for Finnish companies that have operated in Russia.

- In the Baltic Sea strategy the enterprise starts internationalization on the Swedish or German markets before Russia. This model has proved its functionality in several lines of business, including log house manufacturing and construction.
- In the special product strategy the enterprise concentrates on specific niche products that are directed to Russian markets. This model requires strict selection of the relevant product segment.

The strategic plans among most Finnish enterprises in wood construction and other woodworking industries aim to include the lowering of expenses.

The models of residential construction projects are heavily dependent on the availability and price of construction land in Russia. Both the land tenure and the public arrangements to gain construction permits tend to support large regional projects with intensive use of land and potential for positive scale economies of production, especially in Saint Petersburg and its vicinity. According to Marttila and Ollonqvist (2010), site development with normal competitive tendering is gaining popularity in Russia while traditional vertically integrated companies will lose their position. Ivanova et al. (2006) mention that more opportunities for smaller companies have appeared, as large projects are split into smaller projects as in Western economies. That has made it easier for smaller companies to participate in the projects as subcontractors.

These factors affect the focus on the core CAs of the enterprise and usually require networking with Russian companies. They also emphasize the importance of reliable subcontractors. One possibility for Finnish SMEs could also be to form an export ring, where Finnish companies

network with each other and take care of the whole overall delivery together (Marttila & Ollonqvist 2010). A comparable model was presented by Ivanova et al. (2006), in which some service companies mentioned that they would follow a large Finnish company to Russia.

4.5.2 Consumer Attitudes towards Wood Construction in Northwest Russia

Northwest Russia and especially Saint Petersburg and its growth potential form a significant market area for the construction business (Kuusi et al. 2010). Strong economic growth has made possible the growth of the income level among Russian citizens. The size of the Russian middle class has grown (Solanko 2010). The new middle class creates an essential factor in future consumption, and the growth of imports has been much higher than the national income (Sutela 2008). It is also expected that this middle class will pay more and more attention to the total quality of products and services.

On the other hand, this area is challenging from the point of view of Finnish wood construction products and service solutions and does not offer easy possibilities for sporadic exports. However, Russian customers' interest in living in one-family houses creates a basis for demand growth in wood construction. The results of the consumer survey in the Kymleno area support these expectations.

From the point of view of Finnish wood-based site development the Kymleno Housing Fair visitors' answers were positive. On the other hand, housing fair visitors are probably better disposed towards wood than an average home purchaser. The enquiry values were higher than those in Marttila's (2007) material where the results concentrated on the extreme end of the Likert scale.

Price was considered by far the most important selection criterion. Considering production funnelling and business cooperation this has a significant meaning. Therefore, for the Finnish wood construction industry, it is challenging to participate in large-scale site development projects. In product development a keen price has quite a significant influence. In the results, fire safety was mentioned quite rarely although among others (Marttila 2007) it was considered fairly important. It is possible that fire safety is significant in building permit processing but the importance is not emphasized among the end-customers.

According to the enquiry Finnish products are well suited to Russian markets, which is to a certain extent surprising because especially in one-family house exports Russian models have often differed from Finnish models. It is possible that taste in Saint Petersburg is more Western than elsewhere in Russia.

The floor design, environs and distance from a large city are the most important factors after price. The constructor has the possibility to contribute to the floor design and environs. The distance from a large city is dependent on planning policy. The assumption is that densely built one-family house areas emerge on average nearer cities than traditional one-family house areas of sparse density.

According to Boltramovich et al. (2008), the factors that affect the residence choice the most in Saint Petersburg are price and location. This result supports this enquiry's results. However, in Moscow the cleanliness of the environs, house and residence quality and functional floor design were emphasized. According to the results, the friendliness of the environment is an important

factor for every third and high quality for every tenth house purchased in Moscow and Saint Petersburg.

In the Kymleno area most of the residences were finished when they were offered for sale. A relatively large proportion of new residences are sold unfinished in Russia (Boltramovich et al. 2006). One possibility could be to use Hartela's Kide concept, which is based on flexibility of space use. The room size and materials can be self-chosen (Väliniemi et al. 2008). This would make easy changes possible by the residence purchaser.

According to Blecker and Friedrich (2006), mass customization is considered as a developing and in some cases almost the only competition strategy. Its target is to balance the customization degree so that customer satisfaction improves and cost efficiency remains almost unchanged. Manufacturers and the service industry are strengthening their customization processes – the aim is gradually to expand individual products and services without a high cost.

Salovaara (2006) explored dwellers' experience in urban detached housing areas. Compared with traditional detached house living, in densely built urban areas location and services, ease of residence purchase and maintenance, a uniform exterior and safety were experienced as positive features. Compared with living in blocks of flats, the positive sides included dominance of one-family houses, architecture, own yard, child friendliness, communality, peacefulness and privacy. Compared with detached housing, a lack of privacy and compared with blocks of flats, the location of areas and the lack of supply of services were considered as negative sides. The environs of the living area were recognized in the Kymleno enquiry as a third important factor, as well.

Traditionally, there has not been townhouse-type construction in Russia. Thus, it might be challenging to launch the Kymleno type of densely constructed detached house areas more widely.

4.5.3 Business Scenarios for Construction Market Potential in Russia

The overall cost efficiency is among the major primary competitive advantages (CA) required from enterprises to participate successfully in the domestic and international B2B residential construction business. The aggregate cubic volumes and product units constructed in an individual project (the number of individual houses or apartments) are the major differences between current B2B construction markets in Finland and Saint Petersburg. Cost efficiency does not mean only minimum unit costs per produced units but also an ability to deliver the house elements and other construction module units in line with the specifications in the trade contracts. Finnish construction industry enterprises typically have qualifications characterized by tight time schedule control and high-quality delivery.

In Finland, there are almost 900 production plants producing timber houses (TOL 16231), construction carpentry and other woodworking industry components and modules (TOL 16239), mainly for B2B construction industry networks. The enterprises counted in the timber house industry in the Finnish Industrial Statistics produce for the B2C markets and deliver the whole frame of the house (floors, walls, roof) with or without plant assembly. The construction carpentry and other woodworking industries had an aggregate annual turnover of €1030 million and employed 6450 employees in 2008. The aggregate annual turnover in the timber house industry was €837 million and employment was 3948 in 2008.

The professional B2B timber house demand, covering timber house modules and components that enterprises deliver as subcontractors, comes from the construction companies and the real estate entrepreneurs. The production portfolio of construction carpentry and other woodworking industry enterprises comprises windows, doors and door frames, stairs, roof structures and other timber construction components. Even though there are some large corporations involved in the industry in Finland, with an annual turnover of over €100 million and employment of 500–800 depending on the product portfolio, the annual capacity average is much lower. The export share of the aggregate annual turnover has long remained less than 10%. The degree of internationalization among the enterprises in this industry follows a similar pattern. Large corporations are internationally orientated both in their business and in their ownership tenure, while the majority of the enterprises operate only in domestic markets.

When evaluating the demand between B2C and B2B house construction markets there are three fundamental differences – market size, business models and construction traditions – making the analysis of the two subgroups in TOL 1623 challenging. The majority of Russian residential housing market production is B2B; therefore, the evaluation of the potential for the Finnish enterprises in the Russian markets is here restricted to the construction carpentry and other woodworking industries producing for professional B2B timber housing markets. The evaluation of the potential of the timber housing industry enterprises tentative. Some enterprises in this industry group, mainly those producing log houses, have permanent business positions in the Russian market. However, their product portfolio is different from those operating with large-scale area construction projects in the Saint Petersburg market area.

In the following analysis three different business scenarios are defined and evaluated:

a) Increasing production in Finland and exports to Russia.
b) Finnish production capacity investments in Russia.
c) Russian production capacity investments in Finland.

These scenarios are not formulated as substituting alternatives. Rather, they are presented as parallel complementary solutions for the real-life situation. An evaluation of the alternatives gives important information on their macroeconomic income and employment impacts.

Production and export expansion of timber house, construction carpentry and other woodworking industry enterprises in Finland is a basic scenario against which the results of other scenarios are evaluated. In practice, the realization of this scenario means that the production capacity for roof and other construction components, timber windows, doors and door frames and stairs should increase in Finland in order to increase the exports to Russia. Scenario c) evidently implicates the possibility of business entrance into Finnish residential construction markets together with increasing competition in Finland. Alternative b), expanded capacity of Finnish construction carpentry and other woodworking industries in Russia, will primarily create demand for planning and sales activities in Finland.

4.5.4 Input–Output Analysis Measuring Economic Activity Impacts

In order to follow and understand the results of the three scenarios above we briefly introduce the basic properties of the underlying input–output method (IO), which has a long tradition related to economic modelling to measure the potential income and employment impacts on the aggregate national income level because of changes in economic activities. Input–output modelling is based on an input–output matrix describing intersectoral economic transactions

(Figure 4.5). IO modelling is an appropriate and widely accepted method for examining the interdependencies between industries within the context of a national economy. It shows the direct and indirect effects of different changes in production on output, employment, imports and value added. It can also be used in evaluating the impacts of different policy alternatives.

		Intermediate products								Final products				Total
		Production activities							Intermed. prod. total	Consump-tion	Capital formation	Exports	Final products total	
		1	. . .	j	. . .	n				1	2	3		
Production activities	1	x_{11}	. . .	x_{1j}	. . .	x_{1n}	$x_{1.}$			y_{11}	y_{12}	y_{13}	$y_{1.}$	x_1
	.	.	. . .	.	. . .	.	.			.	.	.	.	.
	.	.	. . .	.	. . .	.	.			.	.	.	.	.
	.	.	. . .	.	. . .	.	.			.	.	.	.	.
	i	x_{i1}	. . .	x_{ij}	. . .	x_{in}	$x_{i.}$			y_{i1}	y_{i2}	y_{i3}	$y_{i.}$	x_i
	.	.	. . .	.	. . .	.	.			.	.	.	.	.
	.	.	. . .	.	. . .	.	.			.	.	.	.	.
	.	.	. . .	.	. . .	.	.			.	.	.	.	.
	n	x_{n1}	. . .	x_{nj}	. . .	x_{nn}	$x_{n.}$			y_{n1}	y_{n2}	y_{n3}	$y_{n.}$	x_n
Intermediate inputs, total		$x_{.1}$	. . .	$x_{.j}$	. . .	$x_{.n}$	$x_{..}$							
Imports	1	z_{11}	. . .	z_{1j}	. . .	z_{1n}								$z_{1.}$
Salaries	2	z_{21}	. . .	z_{2j}	. . .	z_{2n}								$z_{2.}$
Operation surplus	3	z_{31}	. . .	z_{3j}	. . .	z_{3n}								$z_{3.}$
Indirect taxes	4	z_{41}	. . .	z_{4j}	. . .	z_{4n}								$z_{4.}$
Primary inputs, total		$z_{.1}$	. . .	$z_{.j}$	. . .	$z_{.n}$								$z_{..}$
Total		x_1	. . .	x_j	. . .	x_n				$y_{.1}$	$y_{.2}$	$y_{.3}$	$y_{..}$	

Primary inputs for final products

Figure 4.5 The structure of the input–output table (ref. Pirhonen et al. 2008).

The data on the national economy, collected and calculated by Statistics Finland, is divided into 64 different production sectors. The core idea behind using IO analysis is to identify the multiplier impacts from business activities between the sectors (the use of production and services in another industry). Commodities from each production sector are in lines of the IO table and described as being used either by other enterprises as intermediate production inputs or by households, public sector or traded through exports as final products. The inputs required in the production of commodities and services by each production sector are in the columns of the IO table, consisting of intermediate inputs from other sectors and primary input factors. Intermediate inputs can also be acquired through imports and the contributions of fixed input factors (capital and indirect taxes).

IO analysis provides measures to make quantitative income and employment impact calculations from the scenarios of possible future production activities. The IO matrix identifies the incoming impacts from an activity throughout the system of the production sectors concerned. These impacts comprise the expanded need for inputs and the production output, both directly and indirectly, not only in the studied sector but also in the other sectors and in the rest of the economy.

The IO system can assist in the scenario evaluations a)–c) defined above. The enhanced construction carpentry and other woodworking industry production activities in case a) will directly expand the use of inputs in Finland and increase the exports of construction components and modules from Finland to Russia. In addition, the use of inputs (domestic and imported) for capacity enlargements will be needed and consequently measured. The enhanced investments of Finnish enterprises in Russian construction component and module production in case b) will not only permanently increase the production of planning services and investment equipment in

Finland, but also temporarily increase production input exports to the Finnish subsidiaries in Russia. The enhanced construction component and module production activities among the Russian enterprises in case c) will expand the use of inputs in Finland and the imports of intermediate production inputs from Russia to Finland as well as the use of inputs (domestic and imported) for capacity enlargements in Finland.

Scenario 1: Increasing Production in Finland and Exports to Russia

The first scenario of business enhancement is based on the increase in Russian demand for Finnish timber windows, doors and door frames, stairs, roof structures and other timber construction components. Two variants are discussed here. The first sub-scenario concerns unchanged sawlog utilization. If the current export demand (€143 million) for construction carpentry and other woodworking industry products is doubled to €286 million, the domestic (direct and multiplier) impacts on national products will increase by €240 million and employment by 1,500 man years in Finland (Toropainen 2011).

The direct production increment matches the current annual production and employment of one large international woodworking industry enterprise. This scenario is based on the assumption that €28 million of the current output of the sawmilling industry will be processed by the domestic timber housing, construction carpentry and other woodworking industry enterprises. The product and service portfolio supplied to Russian markets can be achieved by alternative product portfolio structures with respect to the basic scenario applied here. The second sub-scenario is based on enhanced sawlog utilization. If the current export demand (€264 million) for timber housing, construction carpentry and other woodworking industry products is doubled to €528 million, the domestic sawmilling industry will enhance the total national output by €53 million and the value chains will increase by €551 million. The total employment impact will be 3,200 man years.

The enterprises of the timber housing industry with strong international activities can become interested in restructuring their portfolios in Russian markets and thus enhance the potential export supply. Especially, there are different consumer demand portfolios and project sizes in Saint Petersburg's residential construction markets. The second potential line is based on intensive cooperation, which can vary largely among the construction carpentry and other woodworking industry SMEs.

The doubled production export demand scenario for construction carpentry and other woodworking industry products in case c) will create much the same impacts in Finland if the imports of intermediate inputs from Russia will remain about the same. The specific issue related to case c) concerns the effective use of positive economies of scale and the resulting enhanced Russian business interests in Finnish residential construction markets.

Scenario 2: Finnish Production Capacity Investments in Russia

Scenario b), expanded capacity for the Finnish construction carpentry and other woodworking industries in Russia, will imply changes primarily in planning and sales activities in Finland. The aggregate impacts on the national output and the employment in the Republic of Karelia could in principle be about the same magnitude that was calculated for Finland in scenario a). The latter implies that an increase in the Russian timber product value chain at the magnitude of €551 million matching with the wood product industry output increment of €260 million. The

latter increment could create total employment of more than 3,000 man years in Northwest Russia.

Along with the realization of this scenario it is also possible that there will be a relatively large transition period implying complementary final and intermediate product exports from Finland in order to adapt gradually to the Russian market demand (cf. findings from the metal industry, Vuorinen 2009).

Knowledge and other software-based export structures make the multiplier impacts through input–output formation different from those in the first scenario covering Finland. The role and feasibility of joint interest companies is a relevant question concerning the implementation of this alternative. The feasibility of the scenario implies strong research activities in order to identify and forecast the demand potential among the relevant demand segments and the Russian construction value networks active in that field.

Scenario 3: Russian Production Capacity Investments in Finland

The increasing construction component and module production activity of Russian enterprises in Finland related to scenario c) will expand not only the use of inputs in Finland but also the imports of intermediate construction components from Russia to Finland. We can assume that the Russian investors will also evaluate the options to buy sawn timber from Finland and Russia. The output scenario of a €260 million increase in the aggregate production of timber housing, construction carpentry and other woodworking industry products will enhance the use of inputs (both domestic and imported) for building up the capacity enlargements in Finland and the use of Finnish subcontractor/partner networks. The overall impact on the national output will be €447 million and the employment increment 2,700 man years when the whole sawnwood inputs are imported from Russia and all the products are exported to Russia.

4.5.5 Income and Employment Impacts from Roundwood Trade between Russia and Finland

The direct and multiplier income and employment impact scenarios from the roundwood export reduction from Russia to Finland were also one of the specific issues where input–output analysis was applied in this research consortium (cf. Forsman et al. 2007, Honkatukia et al. 2008 and Turner et al. 2008).

The scenarios were based on the expected production and economy activity reductions in wood product, woodworking and the pulp and paper industries in Eastern Finland and the Republic of Karelia (Prokofieva et al. 2003). Four different scenarios of roundwood import reduction and two different solutions for increasing the domestic roundwood procurement in Finland were analysed with IO calculations.

The economic impacts from the (positive or negative) changes in economic activities in the Republic of Karelia were calculated using two alternative scenarios and the parallel structures of intersectoral interdependencies (Pirhonen et al. 2008 and Toropainen et al. 2009). The basic scenario for the Republic of Karelia was that all the roundwood exports will cease and the production of the wood product industry as well as the interregional trade of roundwood in Northwest Russia will remain unchanged. In the second scenario, along with the total ceasing of roundwood exports, the output of the domestic wood product industry was assumed to double in the Republic of Karelia to compensate for the reducing export demand for logs.

The roundwood export custom tariffs programme, aimed to create barriers to protect the wood resource availability for the domestic industry in Russia, will create considerable structural downgrading in economic activities in Eastern Finland. However, the impacts from these export reductions will be even more influential in Northwest Russia. The domestic use of Russian roundwood compensating for the export demand implies strong domestic enhancement in the timber product demand. The Russian Federal policy programmes, aiming to encourage timber use in domestic residential construction, were discussed briefly above. These programmes provide financial incentives for the expanded domestic use of timber products in residential construction and thus roundwood in wood production industries.

The scenarios concerning projections to increase domestic wood procurement in Finland have indicated only limited opportunities to compensate for the Russian roundwood imports with imports from Sweden and the Baltic States or domestic supply in Finland. Thus, there will be permanent production capacity downgrading in Finland. The key issue concerning the availability of roundwood for the forest industry enterprises and production units in Eastern Finland is how the domestic wood procurement or roundwood imports from other countries can be increased to compensate for the roundwood imports from Russia. The first scenario, with 6, 000 new unemployees and a €1,800 million reduction in the aggregate national output, relies on the annual level of Regional Forest Programme 2010 removals, without compensating for imports.

The second scenario, implying the realization of the sustainable allowable annual cutting levels in Finland, still creates 3,000 new unemployees and a €1,000 million reduction in the aggregate national output. The only sector that will face positive income and employment effects is forestry, because of increasing domestic loggings, transportation and other related services. Scenarios for the impacts in the Republic of Karelia concerning the downgrading of roundwood exports indicate sharp reductions in employment and economic activities with related negative multiplier impacts on the regional economy. In the Republic of Karelia the roundwood export scenario would reduce annual removals by 48% from the level of 2003. The value of aggregate economic output in the Republic of Karelia will decrease directly and indirectly by 2,600 million roubles (6.7% of the total industrial production) and cause 10,200 new unemployed workers (2.9% of the total employment) if no new forest industry production opportunities can be created. The findings from the scenarios above concerning the Russian roundwood customs programme would indicate mutual benefits that the enhanced domestic wood product demand in Russia would provide.

The recent development in Russian residential construction policy programmes indicates enhanced sawnwood demand in residential housing construction activities, especially in the areas of Saint Petersburg and Moscow. If the aggregate sawnwood production in Northwest Russia is doubled, the production increment will increase the national income directly and indirectly by 960 million roubles (2.5% compared with 2003) and the total employment by 690 employees (0.2%).

The impacts on employment and national income will be expanded further by expanding the domestic timber housing, construction carpentry and other woodworking industry activities. The scenario concerning direct and indirect employment impacts from the domestic wood processing through timber housing, construction carpentry and other woodworking industry activities compared with only sawmill processing are 6.7-fold on employment and 5.0-fold on the total national product. Thus, if one-third of the sawnwood production increment is used as construction carpentry and other woodworking industry intermediate inputs for processing

constructing carpentry products, the total national output will increase by 2,270 million roubles and employment by 2,030 employees, when the direct and indirect impacts taken together (Table 4.3). This holds true if the increased timber use in constructing is a net increase instead of timber frame houses substituting for concrete frames. The employment and national product impacts are smaller where substituting between timber and concrete in house construction is concerned.

Table 4.3 Changes in the Republic of Karelia compared with the activities in 2003.

	Roundwood exports ceased	Roundwood exports ceased, sawmilling doubled mainly exported	Sawmilling doubled, one-third of the increase used in domestic construction joinery
Industrial production, million roubles	–2 600	960	2 270
Employment, man-years	–10 200	690	2 030

The sawmill capacity increase and the sawlog demand in Russia will also enhance the Russian export supply of sawmill residue and other wood chips. This scenario for the enhanced use of sawlogs in Northwest Russia is challenged by the excess supply of pulpwood and sawmill residue. There is currently insufficient effective demand for the expanded pulpwood supply in Northwest Russia to reach the balance with the scenarios above. There are reported pulp and paper capacity investment plans that will enhance the pulpwood processing capacity in Northwest Russia. However, the realized demand coming from those projects keeps the temporary excess supply problem unsolved. A feasible solution will be the continuation of pulpwood and sawmill residue exports. Pulpwood roundwood or chip export solutions must be economically profitable among the buyers and imply low export customs. The Finnish forest industry has already reduced the consumption of pulpwood and consequently reduced its import demand and the long-distance transportation of fuel wood or fuel chips is not profitable.

4.6 Conclusion

There are three principle modes of entry applied by Finnish companies when entering into the Russian market (Tretyak et al. 2010):

- greenfield entry by establishing a wholly owned Russian subsidiary
- brownfield entry by purchasing an existing Russian company
- establishing an affiliate relationship with an existing Russian company

Finnish CEOs can choose their managerial policies for business in Russia without interference from other owners when making outright purchases but the contractual relationship restricts the degrees of freedom in joint interest business alternatives. The reference confirms alternative ways to enter Russian markets, thus making the evaluation and comparison of important strategic tasks for the Finnish prefabricated timber housing, builders' carpentry and joinery industry enterprises serving the construction industry.

Ivanova et al. (2006) noticed in their research that the Russian institutional business infrastructure can be characterized by slowness in decision making, additional costs and the amount of work dealing with authorities, which are among the main problems related to the

authority contracting. Consequently many foreign companies need Russian professionals to deal with the various inspections, work permit procedures and other authority connections, as well as the influence of the company's director, in order for things to proceed smoothly. Operating a company in Russia has become easier, taxes have decreased and the possibilities for authorities to interrupt a company's operations have decreased. The judicial system works reasonably well (Ivanova et al. 2006). There are currently also improved opportunities for small companies, as large (public or private) projects are now split into smaller projects, as is usual in Western economies. The latter has made it easier for smaller companies to take part in projects as subcontractors (Ivanova et al. 2006, Narva 2010).

Russian public officers' bureaucratic mentality is used as an explanation for the problems existing in the relations with the bureaucrats (Ivanova et al. 2006). However, Ivanova et al. (2006) identified some progress in public administration.

Saint Petersburg and the related Leningrad Oblast areas constitute permanent CAs for the Finnish enterprises producing timber housing, construction carpentry and other woodworking industry products for proximity and easy accessibility. There is empirical evidence available for that potential (e.g. Herranen 2009, Tolvanen 2009). Those CAs are available for Finnish timber housing and other woodworking industry enterprises. This market potential, especially for timber construction modules, components and related services, can be confirmed through the findings of this research (Marttila & Ollonqvist 2010).

Russian consumers appreciate Finnish quality concerning technical solutions and their implementation in general. These qualifications are also valid in goods and services provided in construction networks (Marttila & Ollonqvist 2010). Finnish enterprises, considering access to the Russian construction market, can acquire sustainable CAs through a developed customer and consumer approach (Tretyak et al. 2010).

A competitive price level has the most significant meaning in large-scale projects. In addition, suitable floor design, environs and location of residential areas should be ensured.

Traditional product and manufacturing orientation is common among many industrialized national construction clusters. Business structures (size distribution among the enterprises and value networks) is heterogeneous in many countries, Russia and Finland among them. It must also be remembered that Finnish construction enterprises have earned their good reputation in the long run, from the barter-trade period of the Soviet era.

Market screening and business focusing are challenging tasks because the changes are likely to become more rapid and the demand implies faster responses than before. Systematic and deep market analyses and information processes towards better understanding have a role in strategic orientation when redirecting the company's or the network's vision and strategy for the selection of a business model or market positioning.

Business network memberships can frequently provide more profitable business solutions than subcontracting. Network membership potential supports the implementation of the gradual assimilation business strategy that consists of the establishment of a joint interest or sole owned enterprise in Russia. Empirical findings from the export networks of SMEs in the Saint Petersburg area provide evidence of the validity of this approach in Russia (Vento 2009). A subsidiary in Russia, substituting for an agent or network partnership, is a valid second step in the gradual internationalization strategy (Karesto 2009). Investment in production capacity is

the typical third step of gradual internationalization, normally meaning a qualitative step in management if the formal company status is changed on this occasion. The two basic alternatives for the establishment of a company in Russia, OOO or OAO/ZAO, are discussed in detail earlier in this paper.

The Russian economy searches for and benefits from investment-induced economic growth. Substituting investments with new technology for the current capacity by international enterprises is an option. These options have been challenged during the last years by the strong and increasing exchange rate of the rouble along with some import customs (see e.g. the survey by Lainela 2008). The growth in the economic activities in the Saint Petersburg region has provided many new opportunities but also witnessed competition growth through market liberalization and while the rules everywhere in Russia are the same, local authorities sometimes interpret the rules arbitrarily (Ivanova et al. 2006). The city and regional authorities are the most important levels of authority considering business on a daily level. However, the influence of tax authorities was seen to be higher on the federal level than on the level of the city or municipality. Especially the custom authorities and custom policies were the subjects of complaints. They were seen to make exporting and importing overly difficult (Ivanova et al. 2006).

The recent multidisciplinary professional scenario regarding the economic prospect in Russia up to 2030 noticed that the resource base in the economy of Russia is strong and the potential for the country to become an important player in the global markets of knowledge-based products and services (Kuusi et al. 2010). There are structural development conditions for that Russian development scenario to be fulfilled: improved energy efficiency, added value in oil export products, imports substituting for production technology investments and the export of these products (Kuusi et al. 2010). The responses from the Federal Government to these challenges have been constructive and even proactive up to now concerning ICT technology and its solutions. Investments in SDI knowledge creation for high-technology investments have been proactive (Okrepilov 2011).

There are recent research findings concerning the experience and expectations among Russian managers concerning the requirements and potential related to cooperation with Finnish enterprises (Ivanova et al. 2006).

Russian CEOs with no current cooperation consider common border geographical proximity and a similar climate as important advantages and reasons for cooperation. Geographical proximity allows for quick product deliveries and a similar climate makes possible the use of specific technologies, innovations and products for cold weather. Russian CEOs see the potential to increase their competitiveness through cooperation with Finnish companies using modern technology, equipment, experience and education/training. Most of the companies mentioned that they would like to have cooperation in production. They would need a certain amount of investment from the Finnish side (Ivanova et al. 2006). They appreciate Finnish education and experience as well as a good command of world standards and see cooperation as a way to increase their international competitiveness (Ivanova et al. 2006).

Possibilities to receive EU funding through different EU projects among the Finnish enterprises are a valuable potential asset for the Russian partners as well as funding options directly from Finnish investors. Cooperation with Russian enterprises implies policy orientation in some cases. There is empirical evidence from Finnish enterprises taking the Russian market potential mainly as a way to use their idle capacity for export business (Hernesniemi et al. 2005). A valid

business approach implies Finnish partners should search for new niches in the Russian markets, because some niches that are already taken in Finland are still available in Russia. This is especially true for technology and small innovation companies (Ivanova et al. 2006).

Information shortages regarding interesting and suitable partners and making business contacts were noticed to be a barrier among Russian SMEs that are looking for partners in Finland (Ivanova et al. 2006). In addition, potential Finnish partners are still considered to expect cheap prices. Russian companies cannot offer such cheap prices any longer, because of the taxes and oil prices, which trigger transportation costs, and also because of the domestic competition. Moreover, the domestic markets are developing and there is an increasing demand from domestic companies (Ivanova et al. 2006).

The business environment in Northwest Russia is becoming more transparent, meaning for example that financial flows are properly reflected in official documentation. Managers in Russian enterprises with cooperation experience partnerships expressed in the interviews their valuation of the reliability and precision among Finnish enterprises (Ivanova et al. 2006). Russian managers highly appreciate the organizational and management skills of the Finnish managers and mention similar interests, trust, experience, expertise, quality, serious long-term intentions and mutually profitable projects as the main criteria for their partnership evaluation. The reliability and credibility of partners and trust are very valuable for Russian companies when looking for a possible partner, since many of them have had a negative experience with one-day companies and dishonest behaviour of Finnish companies in the past (Ivanova et al. 2006). Constantly changing legislation was not considered to be a major barrier to business development in spite of the fact that laws and decrees may be contradictory (Hernesniemi et al. 2005). The language in laws may be so unclear that it allows a law to be read in several different ways, making it difficult for business people to be confident about the legitimacy of everything they do (Ivanova et al. 2006).

Many Russian companies currently have an explicit strategy in the sense of longer-term perspectives for their work and care about their business reputation. However, problems in obtaining payments could appear, especially from state-owned enterprises, which often have financial shortages. In general, when talking about relations with other Russian companies, a clear majority of the interviewees stressed that it is important to know the companies one is going to work with. Previous experience and friends' recommendations help in choosing reliable business partners (Ivanova et al. 2006).

The managers of large companies are usually members of certain industrial associations, trade chambers, etc. They consider such membership valuable for their work (Ivanova et al. 2006). The SME companies, on the other hand, often do not belong to any associations, because they are not such serious players that they can have a significant influence as members. However, many of the respondents mentioned that in the future, when they grow, they would look into membership.

All of the scenarios handled in chapter 4.5.4 have positive employment effects either in Russia or in Finland. The profitability of different scenarios is partially determined by the customs policy in the Russian Federation. It is possible that southeastern companies benefit from the increase in construction markets in Saint Petersburg and its surroundings. If Russia continues to promote local investments and the customs level of wood construction products is maintained on a high level, the increase in fixed investments in Russia will probably continue. On the other

hand, establishing fixed investments in Russia by foreign companies requires a careful strategy and permanent CAs. So far, there have not been any notable fixed investments by the wooden housing industry in Russia.

There are some examples of fixed investments in Finland by Russian companies. In these cases, the Finnish quality image is connected with an extensive marketing network in Russia. It is possible that that kind of structure will become more common to some extent.

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