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Olli Pekkarinen

**NORTHWEST RUSSIAN TRANSPORT LOGISTICS CLUSTER:
FINNISH PERSPECTIVE**

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Abbreviations

AWES	Association of European Shipbuilders and Shiprepairers
Bn	Billion (thousand million)
CA	Current Account
CIS	The Commonwealth of Independent States
ERDI	Exchange Rate Deviation Index
EU	European Union
EU-15	Members of the European Union before May 2004
EU-25	Members of the European Union after May 2004
EUR	Euro (currency)
FEZ	Free Economic Zone
GDP	Gross Domestic Product
GRP	Gross Regional Product, GDP at local level (Russian regions)
IMF	International Monetary Fund
Mn	Million
NWFD	The Northwest Federal District (of Russia)
pkm	Passenger-km
PPP	Purchasing Power Parity
REC	Russian Economy and Clusters (Project)
SME	Small and Medium-sized Enterprises
TEU	Twenty-Foot Equivalent Unit (a standard container)
tkm	Ton-km
TSR	Trans-Siberian Railroad
USD	United States Dollar
VAL	Value-Added Logistics

Foreword

The Northern Dimension Research Centre (NORDI) is a research institute run by Lappeenranta University of Technology (LUT). NORDI was established in the spring of 2003 in order to coordinate research into Russia.

NORDI's mission is to conduct research into Russia and issues related to Russia's relations with the European Union (EU), with the aim of providing up-to-date information on different fields of technology and economics. NORDI's core research areas are Russian business and economy, energy and the environment, the forest cluster, the ICT sector, as well as Russia's logistics and transport infrastructure. The most outstanding characteristic of NORDI's research activities is the way in which it integrates technology and economics.

LUT has a long tradition in performing research and educating students in the field of communist and post-communist economies. From this perspective, LUT is ideally located in Eastern Finland near the border between the EU and Russia.

This research is a part of a larger project, Competition and Co-operation between Finnish and Russian Enterprises, run by Lappeenranta University of Technology. The project is also a part of the Finnish Academy's research programme Russia in Flux, and is financed by the National Technology Agency, TEKES. Furthermore, this study is a part of a larger research project of Russia's Economy and Clusters (REC) by Etlatiето.

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1. Introduction

1.1. Background

Russia-related operations offer wide opportunities for Finnish companies. The closeness of such a vast country with a large population and strong economic growth prospects should attract Finnish actors, despite the risks involved in the Russian operations. This study describes the current situation in Russian transport logistics and finds out available business opportunities for Finnish companies. The main question is whether there is there enough willingness among Finnish companies to invest in Russia. Like in the entire economy, the growth of Russian logistics sector is strong, but the opportunities might not last long before companies from other countries, or for example global logistics chains take advantage of the available possibilities. This study will benefit especially Finnish logistics enterprises with their Russian strategies, but it contains valuable information about Russian logistics for all Finnish companies that are acting or planning to act in Russian business.

A significant part of the work comes from understanding the industry development drivers and the companies' operating logics. The topic is wide and the information is quite scattered. It is common that one source covers only a small detail of the topic and thus numerous sources have to be used. Since the logistics business is one of the less transparent ones in Russia (Dudarev et al. 2004), making a competitive analysis of it is quite a challenge. Statistical data from Russia will be compared with the statistics from the Baltic States and Finland to get a better picture of development trends. However, there will be no deep analysis based on pure statistics, in other words, computer based statistical analysis will not be used. Thus the analysis of statistical data will be qualitative. The primary time scale of this study is 1995-2005, though some medium-term future speculations will be made and statistical data from the past will be used.

1.2. Objectives and Limitations of the Study

The main objective is to find out how Finnish companies could respond to the increasing competitiveness of Russian logistics enterprises – what kind of business opportunities there are in Russia for Finnish companies. To find out these factors, the structure and competitiveness of the Russian transport logistics cluster has to be examined first. The study focuses on the Finnish perspective, emphasizing Southeastern Finland. The research questions are listed below.

Table 1. Research Questions

Main questions	Subquestions
1. <i>What is the structure and competitiveness of the Russian transport logistics cluster?</i>	<ul style="list-style-type: none"> • What is the situation in the different transportation modes? • What is the role of the government? • What is the operational environment of the cluster like? • What kind of structure do the logistics companies have? • What are the main components of competitiveness?
2. <i>What kind of business opportunities do Finnish logistics companies have in Russian markets?</i>	<ul style="list-style-type: none"> • What is the competition situation in Russian logistics? • What are the Finnish competitive advantages? • What is the role of Value Added Logistics? • What is the most important operation mode in the Russian logistics?

This study concentrates on the transport logistics of Russia. It begins with overall description of the present economic state in Russia, continuing with an analysis of the characteristics of trade and logistic business operations between Finland and Russia. The first research question is dealt with in chapter 5, which contains information about how the cluster has evolved and what kind of structure and strategy it has. The main products and services offered by its enterprises, as well as co-operation and collaboration networks are examined for an overall view of the Russian transport logistics cluster.

The second research question is covered in chapter 6. In the beginning of the chapter the results from the surveys and interviews are presented. Based on these results and the analysis of the cluster, the rest of the chapter sums up the co-operation and competition issues between Finnish and Russian logistics enterprises. Finally the challenges for the future are presented.

The Russian logistics cluster can be divided into two main categories; transportation and handling and warehousing of goods. The term logistics can be defined as follows:

Logistics is about comprehensively managing and developing material, information and capital flows; procurement, production, distribution and recycling; maintenance and supporting services; warehousing, transportation and other value-added services; and also customer service and relations (Karrus 2001, p.13).

The above definition covers quite a large area of the topics to be examined. Thus the study concentrates on the transportation of goods and the value-added services on logistics between Finland and Russia. Though the research concentrates on transportation of goods, some references from passenger transportation are used if it helps to understand the situation better.

There are five basic transportation modes: rail, road, water, air, and pipeline transportation (Bowersox et al. 1996, p. 316). The first four of these are studied here. Also the transit traffic and its future trends and possibilities between Finland and Russia are approached. However, the fifth basic transportation mode, pipelines, is excluded from the study because of its low relevance from the Finnish point of view.

2. Russia in a Nutshell

Located in Northern Asia, Russia with its territory of 17 million square kilometers is the largest country in the world – it is over four times the size of the EU-25. Russia borders the Arctic Ocean in the north, the North Pacific Ocean in the east, Asia in the south, and Europe in the west. Russia has a common border with 14 countries¹, the longest with Kazakhstan (6846km). The border between Russia and Finland is 1340 km long. The western part of Russia from the Ural Mountains is a part of Europe. (CIA 2005)



Figure 1. Map of Russia (Finpro 2005b)

The last major census was conducted in October, 2002 – the total population of Russia was 143.5 million. There are 13 Russian cities with a population of over a million: Moscow with 10.1 million citizens, St. Petersburg (4.7 Mn), Novosibirsk (1.43 Mn), Nizhny Novgorod (1.31 Mn), Yekaterinburg (1.29 Mn), Samara (1.16 Mn), Omsk (1.13 Mn), Kazan (1.1 Mn), Chelyabinsk (1.08 Mn), Rostov-na-Don (1.07 Mn), Ufa (1.04 Mn), Volgograd (1.01 Mn), Perm (1 Mn). Together in these cities live about 27.4 million citizens, 19 percent of the total population. (Finpro 2005a; Goskomstat 2004a)

¹ Russia has a common border with the following countries: Azerbaijan, Belarus, China, Estonia, Finland, Georgia, Kazakhstan, North Korea, Latvia, Lithuania, Mongolia, Norway, Poland (with Kaliningrad, see “Case Kaliningrad”), and Ukraine.

However, between the years 1990 and 2002 the total population of Russia diminished by 4.8 million inhabitants – from 148.3 million in 1990 to 143.5 million in 2002 (Goskomstat 2004a; Finpro 2005a). Furthermore Goskomstat, Statistics Russia, forecasts that in 2015 the population will be 138 million (cited in Finpro 2005a). The population has decreased even though after the Soviet collapse the net immigration of Russians from the CIS-countries² remained positive for several years. One of the main causes for this development has been the mortality rate (15.2 deaths per 1,000 population), which significantly exceeds the birth rate (9.6 births per 1,000 population) (CIA 2005; Dudarev et al. 2004, p. 19).

In the following table some of the main characteristics of the countries concerned in this study are presented. The figures demonstrate the significant differences between these countries.

Table 2. Geographical Characteristics (Goskomstat 2003; Statistics Finland 2004b)

Region	Area (1000 km²)	Population (million)	Population density (person/km²)	Share of urban population (%)
Russia, total	17075	145.2	8.5	73
Northwest Russia	1678	14	8.3	82
Finland, total	338	5.2	15	62
Estonia	45	1.4	29	69
Latvia	65	2.3	36	66
Lithuania	65	3.4	53	67

2.1. Basic Economic and Living Standard Indicators in Russia

There are many factors underpinning the current growth of the Russian GDP. However, without the booming oil sector and fast growing oil market prices the growth of the Russian economy would not be that powerful. The amount of Russia's oil production is the second largest in the world after Saudi-Arabia – it produced over 11 percent of the total oil production in 2003. Russia is now pumping oil faster than the other top oil producers when measured by reserves/production, and at the current ratio Russia will empty its oil reserves in about 22 years. There are also undiscovered

² The Commonwealth of Independent States (CIS) is an alliance of 12 of the 15 states of the former Soviet Union, the exceptions being the three Baltic States. The alliance includes the Russian Federation, Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.

resources, which according to the estimates of the US Geological Survey would last for an extra 25 years. (Ollus 2004, p. 4-6)

Table 3. Economical Indicators in 2004, USD. Some of the figures are forecasts. (CIA 2005; Statistical Finland 2005; World Economy Forum 2005; Hernesniemi et al. 2005; TI 2005; WIIW 2005; The World Bank 2004b; UNDP 2004; EU 2005)

Indicator	Russia	Finland	Estonia	Latvia	Lithuania
GDP (Nominal)	581,761	186,000	11,017	13,463	22,231
GDP/capita (PPP-adjusted)	10,380	27,252 ³⁾	14,022	11,998	13,477
GDP growth rate	7.1 %	3.7 %	6.2 %	7.8 %	6.6 %
Unit labor costs (PPP, Austria = 100)	25.20	88.23 ²⁾	41.18	32.33	30.98
Growth Competitiveness Index, GCI (ranking / score)	70th / 3.68	1st / 5.95	20th / 5.08	44th / 4.43	36th / 4.57
Transparency International: Corruption Perception Index (PCI) (rank / PCI score)	90th / 2.8	1st / 9.7	31st / 6.0	57th / 4.0	44th / 4.6
Gross capital formation (% of GDP, 2003)	20 %	20 %	32 %	31 %	21 %
Exchange rate deviation index (ERDI)	2.52	1.00	1.72	2.07	2.08
Average monthly earnings (nominal wage x ERDI)	598	2,869 ³⁾	975	804	868
Unemployment rate	8.2 %	9,0 % ³⁾	10.0 %	10.4 %	11.4 %
Life expectancy in years, 2002	66	78	71	70	73
Gini index (inequality distribution of incomes, in 2000)	45.6	26.9	37.2	32 ¹⁾	31.9
The share of incomes for ten percents	47.0 %	21.6 %	29.8 %	25.9 %	25.6 %
HDI in 2002 (ranking / score)	57th / 0.795	13th / 0.935	36th / 0.853	50th / 0.823	41st / 0.842
Education index (2002)	0.95	0.99	0.98	0.95	0.96

¹⁾ in 1999 ²⁾ in 2001 ³⁾ in 2003

Table 3 presents the basic economic and living standard indicators from the countries considered in this study. To maintain comparability between these figures, they are corrected with the PPP and ERDI factors (Purchasing Power Parity and Exchange Rate Deviation Index). The Human Development Index (HDI) is a composite index of three dimensions: a long and healthy life, knowledge, and a decent standard of living (UNDP 2004).

The share of investments (gross capital formation) of the total Russian GDP is extremely low when considering its level of development. Russia should invest more eagerly to achieve a better and more stable growth – for example in Estonia, the share of investments is much higher (32 % compared to

20 % in Russia). In China the investments have been about 35-40 percent of the GDP in the last quarter of the century, which has set off a significant growth (Pekonen 2005). Luckily the investments have grown in Russia in the last few years (by 12.5 % in 2003 and by 11.5 % in 2004). Furthermore the yearly growth of eight to ten percent is expected to continue also in the near future (Spiridovitch 2005b).

The GDP growth has been strong, but even when corrected with the PPP factor, the GDP/capita remains the lowest among the listed countries. The unemployment as well as the average unit labor costs are relatively low in Russia, when compared to the other countries in this study. However, the World Economy Forum does not consider Russia as a competitive nation for business, and the corruption is considered to be high. Overall the economy looks more promising in the Baltic States – but the size and development prospects make Russia a prominent player in the future.

At a glance, the Russian living standard statistics might not tell the whole truth when it comes to the market potential. While Russia differs a lot from the western countries in factors like GDP per capita and income distribution (GINI index), the truth is that the absolute number of considerably rich people with high purchasing power and high expectations for quality is significant. For example the top ten percent of employees account for almost half of the total wages in Russia - this combined with the GINI index shows that the distribution of income is very unequal in Russia. However, the majority of the population is poor. The number of poor people is larger than the number of rich ones and the life expectancy is low, making the human development index rank the lowest among the countries listed in the table above. There are also positive signs; for example the education index has changed in Russia in the recent years closer to the top countries (UNDP 2004).

2.2. Northwest Russia

In 2000 seven macro-regions were established in Russia – the Northwest Federal District (NWFD) is one of them. The macro-region includes the Republic of Karelia, the Republic of Komi, the Arkhangelsk Region, the Nenets Autonomous District, the Vologda Region, the Kaliningrad Region, the Leningrad Region, the Murmansk Region, the Novgorod Region, the Pskov Region and the City of St. Petersburg, which is also the administrative center of the NWFD (see Figure 2). The size of the area of Northwest Russia is 1.68 million square kilometers, making the NWFD the fourth largest macro-region, covering 9.8 percent of the total territory of Russia. (Goskomstat 2004a)



Figure 2. Map of Northwest Russia (Dudarev et al. 2004, p. 17)

By population the NWFD is the fifth largest macro-region in Russia with its 14 million inhabitants (see Figure 3). About one third of the population lives in the megalopolis of St. Petersburg (see Table 4), a total of 4.7 million inhabitants in 2002. St. Petersburg is the only city in the NWFD with over a million citizens. The second largest district after St. Petersburg is the Leningrad Region with almost 1.7 million inhabitants. The second largest city is Kaliningrad (418,000). (Goskomstat 2004a)

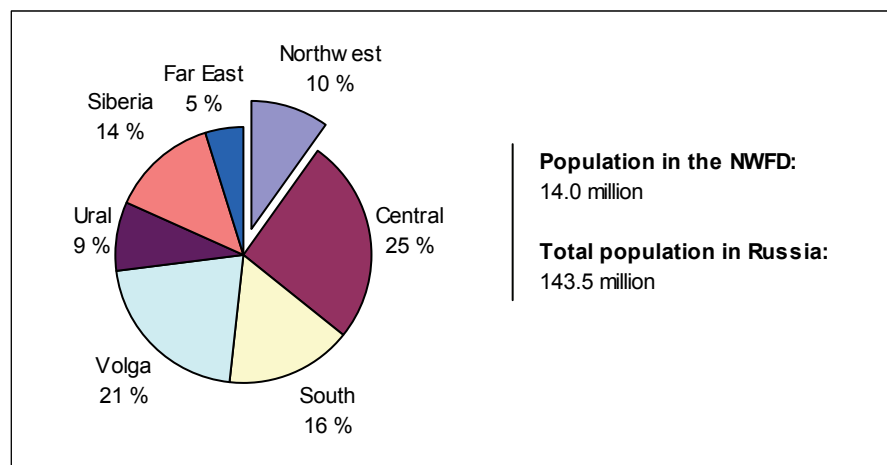


Figure 3. Population of the Macro-regions in Russia (Goskomstat 2004a, Finpro 2005a)

Table 4. Characteristics of the NWFD Regions (Goskomstat 2004a, Goskomstat 2003)

Region	Area Size (1000 km²)	Population (million)	Population density (person/km²)	Share of urban population (%)
Republic of Karelia	172.4	716.3	4.2	82 %
Republic of Komi	415.9	1018.7	2.4	75 %
Arkhangelsk Region	410.7	1295	2.0	75 %
Nenets Autonomous District	176.7	41.5	0.2	77 %
Vologda Region	145.7	1269.6	8.7	63 %
Kaliningrad Region	15.1	955.3	63.3	69 %
Leningrad Region	84.3	1669.2	19.8	78 %
St. Petersburg	1.6	4661.2	2913.3	66 %
Murmansk Region	144.9	892.5	6.2	100 %
Novgorod Region	55.3	694.4	12.6	92 %
Pskov Region	55.3	760.8	13.8	70 %

As in the whole Russia, also in the NWFD the population has been decreasing over the past decade. For example the population of St. Petersburg was 5 million in 1992 but then dropped to 4.5 million. However, mainly because of migration trends from northern regions to southern regions and cities the population of St. Petersburg is now 4.7 million and increasing. (Dudarev et al. 2004, p. 19)

2.2.1. Economic Situation in the Northwest Russia

There are two main restrictive factors in the economic development of Northwest Russia: the low population density and as a result the low density of economic activity. Large areas with no infrastructure and a very low population density need active planning in order to create a basis for economic development. (Dudarev et al. 2004, p. 18; Goskomstat 2004a)

The size of the nominal GRP³ in Northwest Russia was 29.3 billion dollars in 2002. It is the fifth largest GRP among all the macro-regions – its share of the Russian GDP of 296.5 billion dollars is ten percent (see Figure 4). The large share of the Central District's GRP can be explained by the headquarters of the richest and most powerful companies located in Moscow (Kleinhof et al. 1999). During 1995-2002 the NWFD's share of the Russian GDP did not change significantly – in the meanwhile the share of the Central macro-region grew from 25 percent to 34 percent. (Goskomstat 2004a; Goskomstat 2003)

³ GRP (Gross Regional Product) is the GDP at local, regional level.

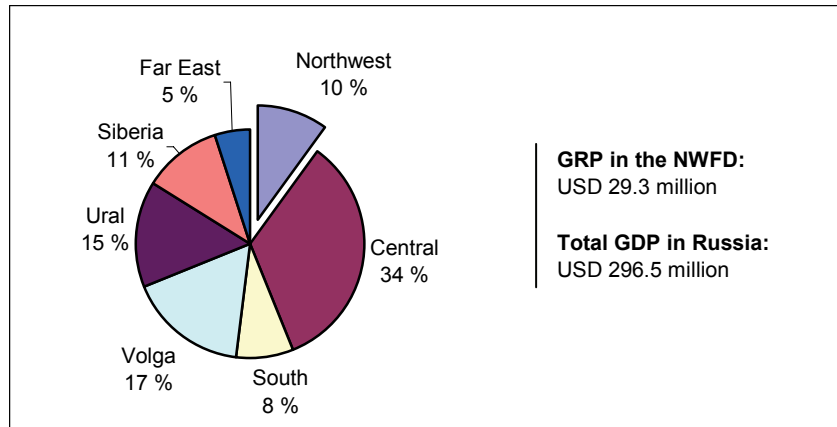


Figure 4. GDP of Russia - Shares of the Macro-regions in 2002 (Goskomstat 2004a)

St. Petersburg's GRP is far greater than that of any other region in the NWFD (see Table 5). However, St. Petersburg has some problems inherited from the Soviet period, which reflects to a relatively low production volume and thus diminishes the amount of GRP per capita. The Nenets Autonomous District and the Komi Republic have greater GRP per capita figures than St. Petersburg, mainly because of their predominantly raw material -based industries, which offer better possibilities for export and thus better prices.

Table 5. GDP, GDP per Capita and the Density of Population in the Regions of the NWFD Compared to the Total Russia and Finland in 2002. The PPP rate is supposed to be the same in the whole Russia, which might not fully apply. Finland's figures are without PPP adjustments (Goskomstat 2004a, Statistics Finland 2004a, CHUF 2002, author's calculations)

Region	GDP (USD Bn, PPP adj.)	GDP/capita (USD, PPP adj.)	Density of Population (1 / square Km)
Russia, total	818.4	5636	8.5
Northwest Russia	80.9	5794	8.3
Finland, total	132.0	25352	15.4
St. Petersburg	31.7	6818	2913.3
Kaliningrad	3.6	3718	63.3
Leningrad	8.8	5269	19.8
Novgorod	2.8	3969	12.6
Vologda	7.2	5620	8.7
Murmansk	5.8	6583	6.2
Pskov	2.2	2793	13.8
Karelia	3.6	5018	4.2
Komi	8.0	7905	2.4
Arkhangelsk	5.8	4535	2.0
Nenets	1.4	34765	0.2

Overall the NWFD regions can be divided in two categories by their GRP growth rate: St. Petersburg, the Nenets Autonomous District, the Kaliningrad Region, and the Leningrad Region show signs of strong growth, while the other regions have to deal with smaller growth figures. In the stronger growth group the Nenets Autonomous District can be considered as a bit of a stranger because of its origin as an oil producer, and thus benefiting of the current situation of the risen oil prices (Goskomstat 2003; Goskomstat 2004a). As a whole, the NWFD has quite the same level of GDP per capita as the total Russia, which is relatively low.

2.2.2. Main Industries

The structure of the GDP is rather equally distributed by production (including industry, agriculture, and construction) and services in Russia. However, when the separate regions in the NWFD are compared, the situation is less balanced (see Figure 5). The relatively large shares of industry are partly caused by mining, which is included in the industry category. This combined with the high oil prices distorts the statistics to some extent.

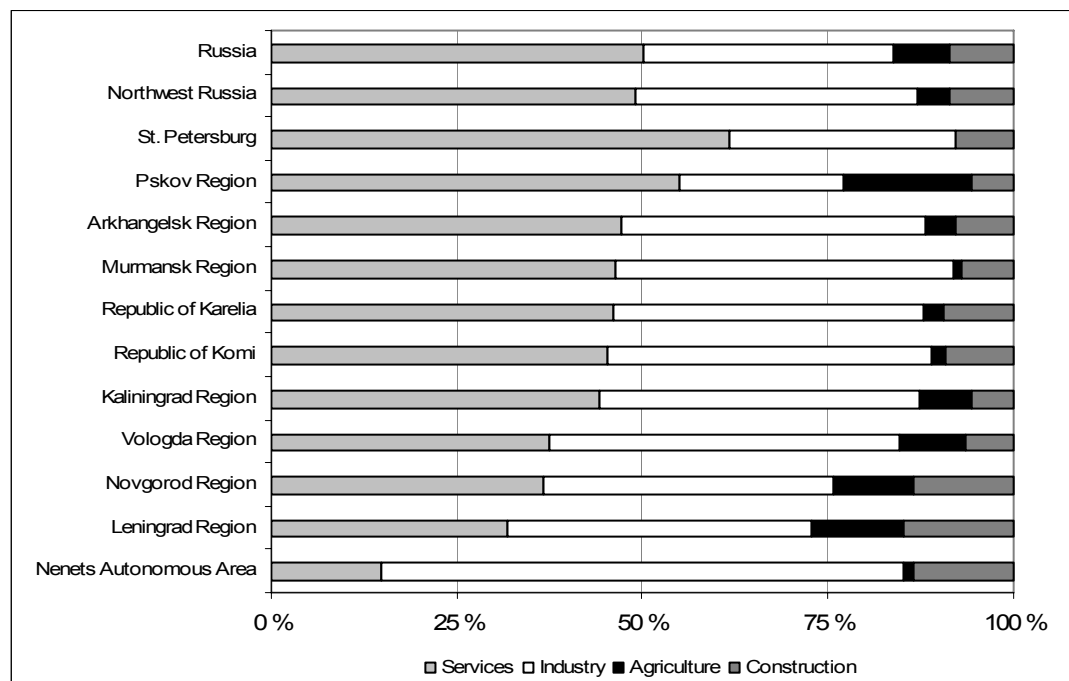


Figure 5. Structure of the GDP (or GRP) in the NWFD in 2001 (Goskomstat 2003)

The wide availability of natural resources combined with the slow development of the service sector makes many of the regions still production dominated. Services have long suffered from the low population density, low purchasing power, and an insufficiently developed infrastructure, which are only slowly improving. Services dominate production only in St. Petersburg and the Pskov Region,

where many St. Petersburg residents spend money in services on their holidays. Services dominating St. Petersburg is a sign of economical diversification, which in the end spurs the active development of St. Petersburg. (Dudarev et al. 2004, p.21)

The largest industries in the NWFED are energy (21.9 % from the total regional industrial output in 2002) and food (21.2 %) industries. The energy industry can be divided into two categories, electricity and oil. In the NWFED, the share of electric energy in the total output of energy industry is 56 %, while the share of oil energy is 44%. The share of oil energy industry is extremely large in the Nenets Autonomous District. The whole energy sector covers 98.4 percent of the GRP of Nenets, with the oil-related part covering 96.8 percent. Other strong industry branches in the NWFED are mechanical engineering (16.7 %), also forest and ferrous metallurgy have quite similar shares – the structure of the GRP varies somewhat in different regions, as can be seen in Figure 5 and Table 6.

Dudarev (2003) forecasts the situation of today's competitive clusters in Northwest Russia in 2010. He estimates that the ICT-sector will face the largest growth, while the energy and forest sectors will also grow significantly. According to the forecast, the size of the metal sector will stay constant and the food sector will face a dramatic decrease.

Table 6. Key Industries of the Northwest Russian Regions, percentage of the Total Regional Industrial Output in 2002 (Goskomstat 2003)

Region	Key Industries
Karelia	Forest 45.2% - Energy (electric) 14.1% - Ferrous metallurgy 12.8% - Food 12.3%
Komi	Energy (mainly oil) 68.4% - Forest 23.5%
Arkhangelsk	Forest 44.5% - Energy (mainly oil) 30.9% - Mechanical engineering 13.5%
Nenets	Energy (oil) 98.4%
Vologda	Ferrous metallurgy 59.8% - Energy (electric) 8.7% - Forest 8.3%
Kaliningrad	Food 30.8% - Energy (mainly oil) 24.8% - Mechanical engineering 24.0%
Leningrad	Energy (mainly oil) 28.0% - Food 27.2% - Forest 18.3%
Murmansk	Non-ferrous metallurgy 26.4% - Energy (electric) 20.8% - Food 18.1% - Chemicals 15.8%
Novgorod	Chemicals 27.3% - Food 20.1% - Forest 16.3% - Mechanical engineering 13.5%
Pskov	Mechanical engineering 30.5% - Food 27.2% - Energy (mainly electric) 19.4%
St. Petersburg	Food and tobacco 35.0% - Mechanical engineering 33.7% - Energy (electric) 10.6%

Expert RA (Rating Agency) has rated the top Russian companies annually since 1995. In 2004 the top-400 companies were listed by the volumes of their sales in 2003. The 2004 listing includes 39 companies from Northwest Russia (see Table 7 for the first ten). The standings are not high - the largest company of the NWFD, Severstal, was placed 19th while the second largest one, Philip Morris Izhora, was placed only 45th. However, both these companies made the top-20 list of the most profitable companies in Russia. With its net profits of \$612.9 million Severstal was placed 12th while Philip Morris Izhora was the last having profits of \$252 million. (Expert RA 2004)

Table 7. Top 10 Companies of the Northwest Russia by Sales in 2003 (sales in USD millions, rank in top-400 in brackets, source: Expert RA 2004)

Rank	Company	Region	Industry	Sales	Net profits
1 (19)	Severstal	Vologda	Ferrous Metals	2663.3	612.9
2 (45)	Philip Morris Izhora	St. Petersburg	Tobacco	751.2	252.0
3 (69)	Ford Motor Kompani	Leningrad	Engineering	485.0	22.2
4 (102)	Petro	St. Petersburg	Tobacco	352.3	3.7
5 (109)	Syktvykarski LPK	Komi	Wood and Paper	341.3	46.1
6 (114)	Pulkovo	St. Petersburg	Shipping and Transport	314.6	6.1
7 (120)	Baltiiski zavod	St. Petersburg	Engineering	309.4	-14.9
8 (122)	PO Sevmash	Arkhangelsk	Engineering	307.1	-2.6
9 (133)	Toplivno-energeticheskiy kompleks Sankt- Peterburga	St. Petersburg	Housing & Communal Services	274.7	-2.7
10 (136)	Multon	St Petersburg	Food	271.6	13.7

2.3. “Baltic Hong Kong” – Kaliningrad

To clarify the Russian trade situation, the case of Kaliningrad has to be described. Kaliningrad is geographically separated from the Russian mainland. It is a small area (15,100 km²) surrounded by Lithuania and Poland, and has some special benefits from the central government. Kaliningrad was formerly a part of Germany, but when it was conquered by the Soviet Army in 1945 at the end of World War II, the whole German population was replaced by Soviet settlers. Kaliningrad became a closed military base, in which the headquarters of Soviet Baltic Fleet was placed. (Kilpeläinen 2005, p. 22 & 59-62; Oldberg&Hedenskog 2000, p. 65-70)

While the other Baltic States gained autonomy after the Soviet Union had collapsed, Kaliningrad remained a part of Russia. Kaliningrad opened its borders to foreigners, and after some fifty years of centralized planned economy, it was granted a status of special or free economic zone (FEZ) in 1991. This status was dependent on the relationships between the Russian government and Kaliningrad – in 1995 it was even temporarily revoked by President Yeltsin. In 1996 the Federal Law “On the Special Economic Zone in the Kaliningrad Region” was established, clarifying the legal and economic status

of Kaliningrad. The law has three major aspects, covering land use by foreigners, production origin issues, and some privileges for the former citizens of the USSR. (Kilpeläinen 2005, p. 59-62; Oldberg&Hedenskog 2000, p. 65-70)

However, the FEZ-status did not give the desired boost to Kaliningrad's economy in the 1990s. It is said that in Kaliningrad all the negative sides of Russia are combined, including corruption and criminal actions. After a new governor was elected in 2000, the situation has become better. The industrial production has grown faster in Kaliningrad than in the whole Russia – e.g. many companies are growing fast and the port traffic has strongly increased. The main functions in the import oriented Kaliningrad are manufacturing and assembling. Companies mainly from the neighboring countries, Germany, Poland, and Lithuania, make direct investments in Kaliningrad due to the custom-free access to the Russian markets. (Kilpeläinen 2005, p. 59-62 & 68; Oldberg&Hedenskog 2000, p. 65-70; SPK 2005)

Kaliningrad's location inside the borders of the EU makes the traffic between Kaliningrad and Russian mainland difficult – visas are required. Kaliningrad is one of the most difficult topics in negotiations between Russia and the EU. Neither party accepts compromises, which makes the issues hard to solve. Russia's possible membership in the WTO has topics related to Kaliningrad as well. In order to meet the requirements of the WTO membership, a new legislation proposal has been made. This law would for example eliminate the customs advantages and change the conditions for tax regimes – and thus affect the SME sector negatively. (Kilpeläinen 2005, p. 59-62; Oldberg&Hedenskog 2000, p. 65-70) The future of Kaliningrad seems to be quite complicated and politically unstable; there are a lot of question marks left – like in the whole Russia.

2.4. International Trade of Russia

Russia's largest trading partner is Germany in both imports (with a share of 14.3 %) and exports (7.6 %). Russian exports to Finland are the eleventh biggest (2.7 %) and imports the ninth biggest (3.3 %) (see Figure 6). Finland's foreign trade with Russia is roughly on the same level as with Japan. (Moijanen 2005).

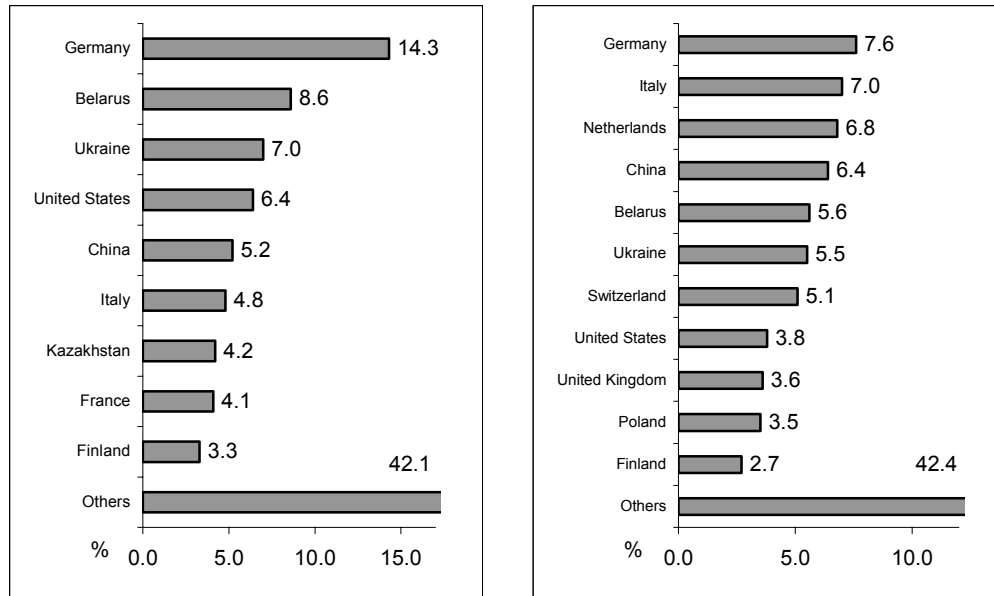


Figure 6. Russian Imports (left) and Exports (right) in 2003 (Hernesniemi et al. 2005, p. 93)

Though the growing purchasing power of the Russian population accelerates imports, exports are growing a bit faster mainly due to the high raw material prices. The current account (CA) has had a structural surplus for quite a long time. In 2004 the CA was ten percent of the GDP. Moreover the Russian CA, which is the balance of visible and invisible trade but also a mirror image of the net capital exports, has a clear growth trend (see Figure 7). This means that Russia is actually significantly financing the rest of the world, while it should invest heavily in itself.

In Russian exports the share of mineral products, including crude oil and natural gas, is the largest. Also metals, products made of metal, and chemical products have a significant share in exports. The relatively high prices of these products in the world market have boosted the surplus in trade, which was 58.2 billion dollars in 2004. (Hernesniemi et al. 2005, p. 90, WIIW 2005) The high surplus in the trade balance is the major factor contributing to the high surplus in the CA.

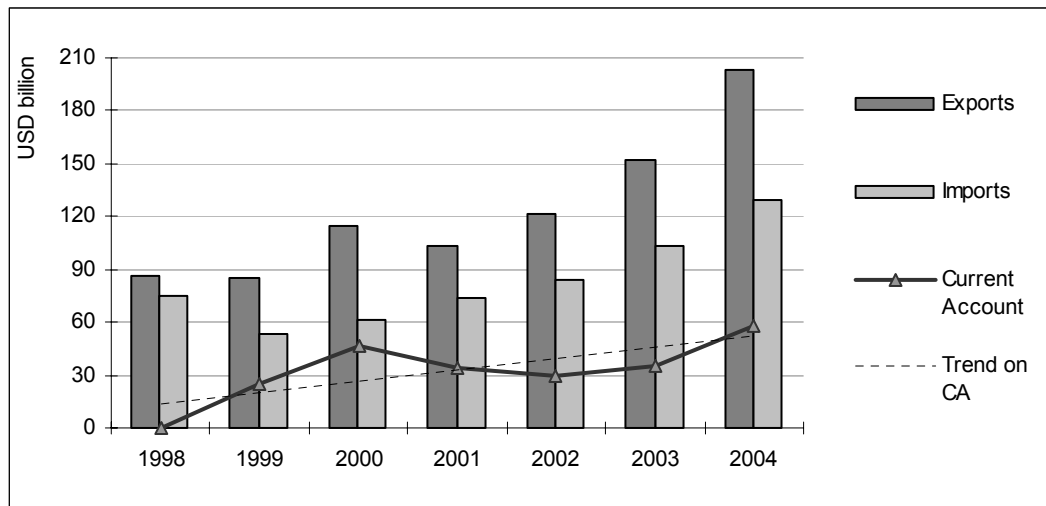


Figure 7. Russian Exports, Imports, and Current Account (WIIW 2005, calculations)

In general, the Russian foreign trade has three main characteristics: the busiest direction is the west, the fastest growth is in the east, and the trade with less developed countries takes place in the south. The specific trading articles and partners of each of these main directions are listed in Table 8. (Hernesniemi et al. 2005, p. 143) In the context of this study the most important direction is the west. The export articles in the Russian western trade mainly consist of bulk products, whose transportation is well covered by the ports of Russia and the Baltic States. However, the such import articles as cars and consumer goods are important for the transit traffic via Finland.

Table 8. Characteristics of Russian Foreign Trade (Hernesniemi et al. 2005, p. 144)

Direction	Export articles	Import articles	Trading partners
West	Oil and oil products, gas, metals, timber, chemical products	Cars and machinery, consumer goods, grocery	EU, Europe, USA, Canada, Latin America
East	Cars and machinery, timber, chemical products, consumer goods	Gas, metal, cotton, textiles	Central Asia, Turkey, Pakistan, India, Iran, Near-and Middle-East
South	Oil, gas, timber, cars and machinery, metals	Cars, electronics, service technology, consumer goods	China, Japan, South-Korea, Asia and Pacific countries

2.5. Economic and Trade Development in the Near Future

The Russian economy has grown exceptionally rapidly in the past five years, even when compared to a longer period than the time after the Soviet Period. There are several reasons for this development (Hernesniemi et al. 2005, p. 15):

- a. The trade situation has been favorable mainly because of the crude oil prices
- b. The sociopolitical situation after the presidential elections in 2000 has been stabilized and institutional reforms have been started (in law, taxation, pension system, executive power)
- c. The devaluation of the ruble made the local producers much more competitive, though the advantage of that disappeared along with the stronger ruble in 2002-2003
- d. Local demand and investments have grown for both local and foreign firms.

The Ministry of Economical Development and Trade in Russia has prepared an economical forecast for Russia for the period of 2005-2007. The forecast states three possible scenarios for the growth of the GDP:

- a. *Pessimistic scenario*: International market prices for raw material and energy will collapse and the losses cannot be covered with the development of domestic economy.
- b. *Conservative scenario*: International oil prices will drop significantly but not as much as in the pessimistic scenario. Losses from the export incomes can be covered with an efficient growth of domestic economy.
- c. *Optimistic scenario*: International oil prices will stay at the boundaries set by OPEC and the growth rate of investments in the economy of Russia will stay at the level of 2002-2003.

According to the Ministry of Economical Development and Trade in Russia, the optimistic scenario is the most likely one, while the most unlikely is the pessimistic scenario. The GDP of Russia had an annual growth rate of 7.3 percent in 2003 and according to preliminary figures (Moscow Times 2005) 7.1 percent in 2004. The optimistic scenario states that the annual growth will lower to the level of 6 – 6.5 percent while the pessimistic scenario goes to less than 5 percent during 2005-2007. The forecasts of the International Monetary Fund (IMF) are somewhat similar. (cited in Hernesniemi et al. 2005, p. 7) According to the Economist Intelligence Unit (EIU), the growth in Russia should be on the same level as in the Baltic States, outpacing the EU-15, East-Central Europe and the Balkans, see Table 9. (EIU 2005a)

Table 9. Growth Prospects in the European Transition Economies (Hernesniemi et al. 2005, p. 8; EIU 2005a; Moscow Times 2005; WIIW 2004; Kauppalehti 2005a)

GDP Growth in Percents	2004	2005	2006
Russia (Russian ministry's forecast)	7.1	5.0 - 6.5	4.8 - 6.1
Russia (IMF forecast)	7.1	5.7	5.7
East-central Europe ⁴	4.6	4.3	4.1
Balkans ⁵	5.2	4.7	4.7
Baltics ⁶	6.7	6.0	5.6
EU-15	2.3	at least 2 - 4	at least 2 - 4

In the beginning of the 2000's both the exports and the imports in Russia have grown strongly due to the development in the export of energy forms – it is expected that from now on the imports will grow by 10 percent and the exports by 5 percent annually. However, the export of machinery and equipment has declined significantly from 1990, mainly because of the customers. The majority of Russia's machinery exports are to developing countries, which indicates that the competitiveness of Russian machine building is relatively low. This applies also to the other high value-added products of Russian industries. (Hernesniemi et al. 2005, p. 9 & 16)

The growth of machinery, equipment, and transportation imports has mainly caused the overall growth in the Russian imports. Another largely grown group is raw materials and semi-manufactured products, which means that more and more industries are having hard time finding appropriate raw materials from the Russian home markets. A noticeable increase in the proportion of investments goods compared to consumer goods forms a new trend in Russian imports. (Hernesniemi et al. 2005, p. 16)

⁴ Czech Republic, Hungary, Poland, Slovakia, and Slovenia.

⁵ Bulgaria, Croatia, Macedonia, Romania, and Serbia and Montenegro.

⁶ Estonia, Lithuania, and Latvia.

3. Trade and Transportation between Finland and Russia

The economy of Finland is based on the following three industries: information and communication technologies, forest, and metal industries – in total the manufacturing industry is the largest employer in Finland. It employs one fifth of the Finnish work force, with the metal industry as the largest employer. Almost half of the manufacturing industry employees are employed in the metal industry. About 72 percent of the total number of almost 2.4 million employees worked in the private sector in 2003. (Statistics Finland 2004b)

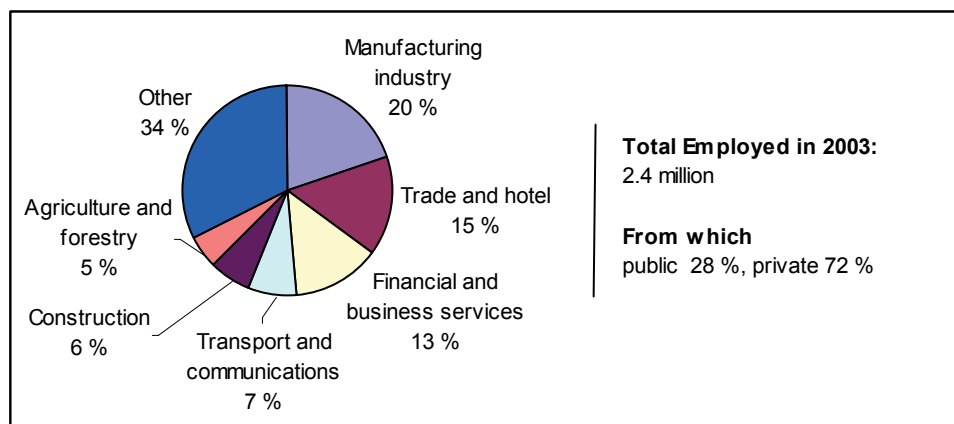


Figure 8. Economic Structure of Finland, Employed Persons by Industry (Statistics Finland 2004b)

3.1. Finland's Foreign Trade

Germany is Finland's number one trading partner when imports and exports are counted together. Germany was the number one in Finnish exports and imports in 2003, but in 2004 exports to Sweden exceeded the exports to Germany. Also the trade with Russia has increased in the last few years and thus Russia has become a major trading partner for Finland once again. These three countries account for over one third of the Finnish foreign trade. The United States and the United Kingdom are the second and third largest foreign trade partners of Finland.

Table 10. Finland's Foreign Trade, million Euro (Tullihallitus 2005; Statistics Finland 2004)

	Imports		Exports	
	2003	2004	2003	2004
Total	36,775	40,270	46,378	48,790
Germany	5,513	5,924	5,491	5,225
Russia	4,367	5,318	3,477	4,352
Sweden	4,064	4,395	4,590	5,350
USA	1,711	1,869	3,760	3,122
UK	1,936	1,828	3,740	3,451

The above mentioned three industries, information and communications, forest, and metals, formed together over half of the Finnish exports (53.2 %) in 2004 as can be seen in Figure 9, which shows the seven largest exporting industries of Finland in 2004. The metal industry was the only one to have a significant growth rate – between 2003 and 2004 it grew by 27 percent, though the growth was mainly spurred by the increased prices in basic metals. Apart from the top seven industries, the exports of motor vehicles grew by almost 25 percent, all of which was due to the increased transit traffic of cars. The amount and value of exported cars to Russia (over 15,000 cars) grew five-fold – in Latvia and Lithuania the growth was three-fold. (Tullihallitus 2005)

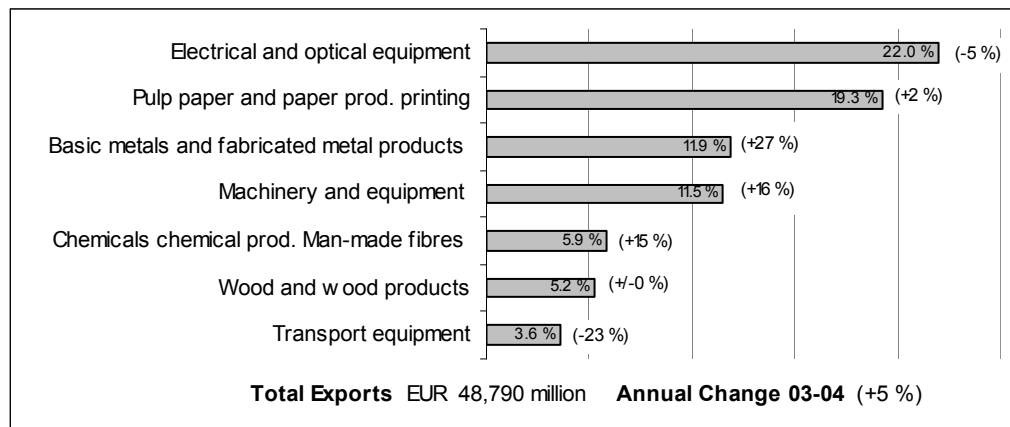


Figure 9. Finland's Foreign Trade in 2004: Exports by Manufacturing Industries (Tullihallitus 2005)

The Finnish imports categorized by their use are shown in Figure 10. The number of intermediate goods grew the most in 2004, 13 percent when compared to 2003. However, as in exports, the imports grew mainly due to the increased world prices of basic metals and ore concentrates. The cause of growth in energy was the same. The growth in durable consumer goods took place mainly due to the growth in the number of passenger cars (over +20 %). (Tullihallitus 2005)

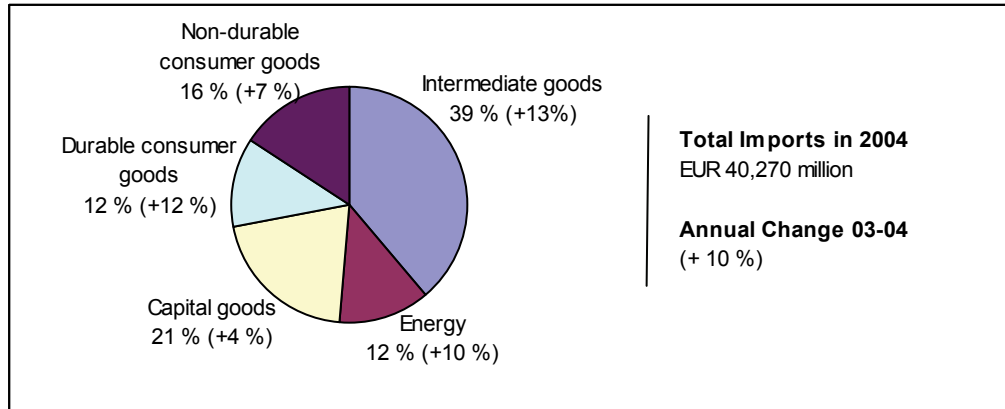


Figure 10. Finland's Foreign Trade in 2004: Imports by Use (Tullihallitus 2005)

3.2. Foreign Trade between Finland and Russia

The role of Russia as Finland's traditional trading partner has changed several times due to the changes in the political relationships between these two countries. In the 19th century the role of Russia was crucial in Finnish exports with a share up to 30-40 percent. After Finland's independency, the trade dropped momentarily to almost zero but increased again after the Second World War. The Soviet Union accounted for 15-25 percent of Finnish exports during 1945-1990. After the Soviet period, Finland's exports to Russia still fluctuated like a roller-coaster – economical difficulties and the currency devaluation in 1998 dropped the exports to Russia again to roughly 4 percent.

In the last few years the trade between Russia and Finland has begun to grow. Russia was the second largest importer to Finland with a share of 13.2 percent (5,300 million euro) and the third largest exporter with a share of 8.9 percent (4,400 million euro) in 2004. During 2002-2004 the Russian imports rose by 50 % and the exports by 39 % while the growth in the Finnish total imports was 13 % and in the exports only 3 %. Russia is now third in the total trade ranking, but with the present growth rate it might become Finland's largest trade partner already in 2006. Historically the imports and exports have been about the same size; however the present development of the negative trade balance (larger imports than exports) is a consequence of the increasing prices of Russian export articles, e.g. of crude oil. (Dudarev et al. 2002, p.16; Statistics Finland 2004b; Tullihallitus 2005)

The ten largest Finnish export articles to Russia are listed in Table 11. These ten articles form majority of Finnish exports, led by telecommunications etc. equipment. The largest growth between 2003 and 2004 was in the exports of road vehicles, which were the third largest group. If the growth continues, the position of the road vehicle exports among the top 10 is going to rise.

Table 11. Top 10 Finnish Export Products to Russia in 2004 (Finpro 2005a)

SITC-article (Standard International Trade Classification)	Export in EUR million	Share from total exports, %	Change in 03-04, %
Telecomms etc. Equipment	1075	24.7	52.9
Electric machinery, nes and parts	384	8.8	18.9
Road vehicles	337	7.8	226.6
Paper, paperboard and articles thereof	299	6.9	13.7
Machinery for special industries	221	5.1	11.2
General industry machinery	181	4.2	-4.5
Medicinal, pharm. products	154	3.5	23.2
Other manufactured articles	153	3.5	-7.0
Dyeing, tanning and colouring material	145	3.3	12.7
Iron and steel	116	2.7	32.2
Top 10 total	3065	70	34.0
Total Exports	4352	100	25.2

When Estonia is compared with Russia as a trading partner of Finland, the outcome is quite interesting. Though Russia is about 100 times bigger if measured by population, the Estonian exports are only about three times smaller than the Russian. The reason for that is that Finnish companies are counting on Estonia's brighter future and thus investing in the trade with it. (Dudarev et al. 2002, p.16) It is possible for Finland to benefit also from the Russian growth potential by including Russia in companies' future strategies.

3.3. Finnish Operations in Russia

Finland has long traditions in Russian business and should now take the opportunity to benefit from the ongoing Russian economic growth. The largest winner companies can be divided into four non-exclusive groups (Kotilainen et al. 2003, p. 128):

- 1) Strong and large international enterprises
- 2) Small and flexible enterprises
- 3) Enterprises operating near the border
- 4) Enterprises in the tourism sector

From these the second and third group form the ground of Southeast Finland's competence in the Russian logistics markets – the favorable location and the knowledge of the Russian markets are strong, but the companies operate in relatively niche market areas – mass operations like scheduled transports in Russia might be too large entities to handle by Finnish SME's.

There are always risks involved when doing business abroad. Especially with Russia, the risks should be taken under consideration. Kotilainen et al. (2003, p. 129) describe eight possible risk factors (however, according to Tiusanen (2005), the Dutch disease does not apply in Russia):

- 1) Instability in the political situation
- 2) Instability in social life and diseases
- 3) Delays in negotiating the WTO- and EU-agreements
- 4) Lack of investments, which slows down the growth
- 5) Lack of R&D activity
- 6) Brain drain, emigration of highly educated people
- 7) Low price of energy
- 8) (So-called Dutch Disease: the success of the energy sector prevents the growth of other sectors)

These risks should be considered when planning Russian operations – all of these can have either a direct or an indirect effect on the logistic operations. On the other hand too much caution is not wise either, if the business possibilities are thus wasted. Also the role of both Finnish and Russian governments is decisive – collaboration agreements made by the authorities are important to ensure safe environment while instances like the EBRD (The European Bank for Reconstruction and Development) and EIB (The European Investment Bank) can assist in finance related issues. The stronger the relations between Western Europe and Russia become, the better the chances are for Finnish companies. (Kotilainen et al. 2003, p. 129) One additional problem and risk in doing business with Russia is that Russia practices currency rate protectionism. The ruble is undervaluated to some extent, though the rate has improved in the recent years. The protectionism causes higher prices for foreign products, which makes the imports less attractive.

3.4. Transportation and Logistics between Finland and Russia

The Finnish logistics industry benefited from the collapse of the Soviet Union. After the collapse, there was a sudden increase in the traffic between Finland and Russia. This opened many opportunities to Finnish companies, especially in trucking, because the Russian companies lacked either the knowledge or the equipment to handle the increase. The business was quite steady before the Russian ruble crisis in 1998. The crisis led to decrease in traffic, both trade and transit, causing problems to Finnish companies and changing the competition environment once again. Because of the lowered costs for Russian trucking companies, they took over the majority of the traffic between Finland and Russia. Traffic via Finnish ports grew due to the increase of Russian traffic – value added logistics (VAL) became also common. (Kilpeläinen 2005, p. 9-10)

Finland has an important role as a middleman in the Russian high value imports. The eastbound transit traffic is five times higher in value than the Finnish exports to Russia (17.7 vs. 3.5 billion euro in 2003). Together the eastbound transit traffic and the Finnish exports summed up to 21.2 billion euro, which is, depending on the source of the Russian import statistics, about 30-40 percent of the total value of the Russian imports. (Hernesniemi 2004) The closeness of Russia is a clear advantage for the Southeast Finnish companies: the distance between Vaalimaa and St. Petersburg is only about 230 km (see Figure 11).

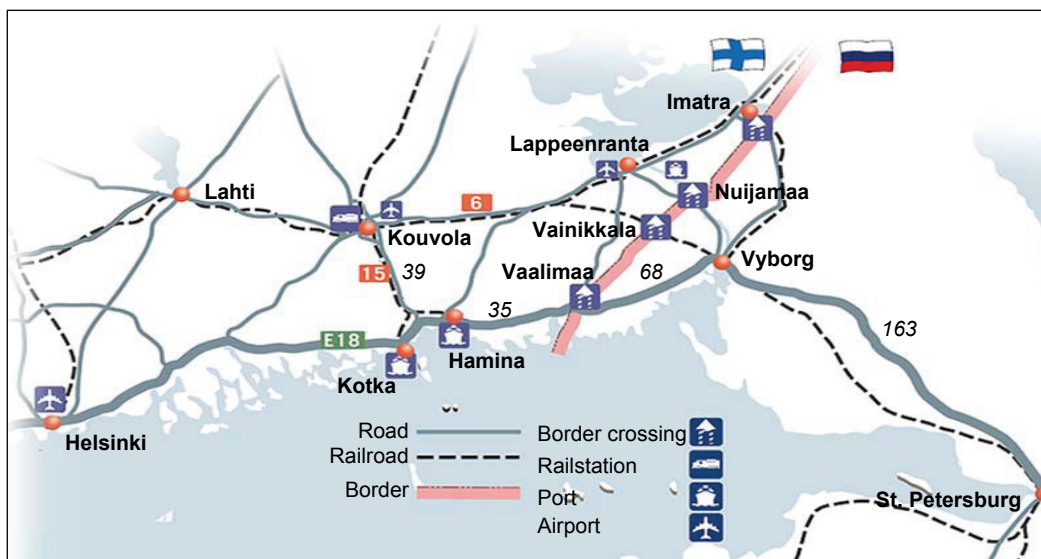


Figure 11. Logistics Nodes in Southeast Finland (Centre for Maritime Studies 2003, p.12)

3.4.1. Transit Traffic

In this study transit traffic is defined as traffic where Finland acts as intermediary for goods going to or leaving Russia. An agreement on transit goods between Soviet V/O Sojuzvneshtans and Finnish Railroads (VR) officially launched the transit traffic between Russia and Finland in 1976 (Widgrén et al. 2000, p. 46). Since then the business has grown from 860 thousand tons to 5.6 million tons in 2004. In between there have been many ups and downs – in 2001 the transit reached its all time peak and was again on the same level in 2004 (see Figure 12). The total amount of transit traffic can be calculated by two ways: it is either the amount of sea transit or the combined amount of road and rail transit. In 2004 the road transit gained almost 16 percent when compared to the situation in 2003. However, the growth of sea transit was only 3 percent, while rail transit hardly grew at all.

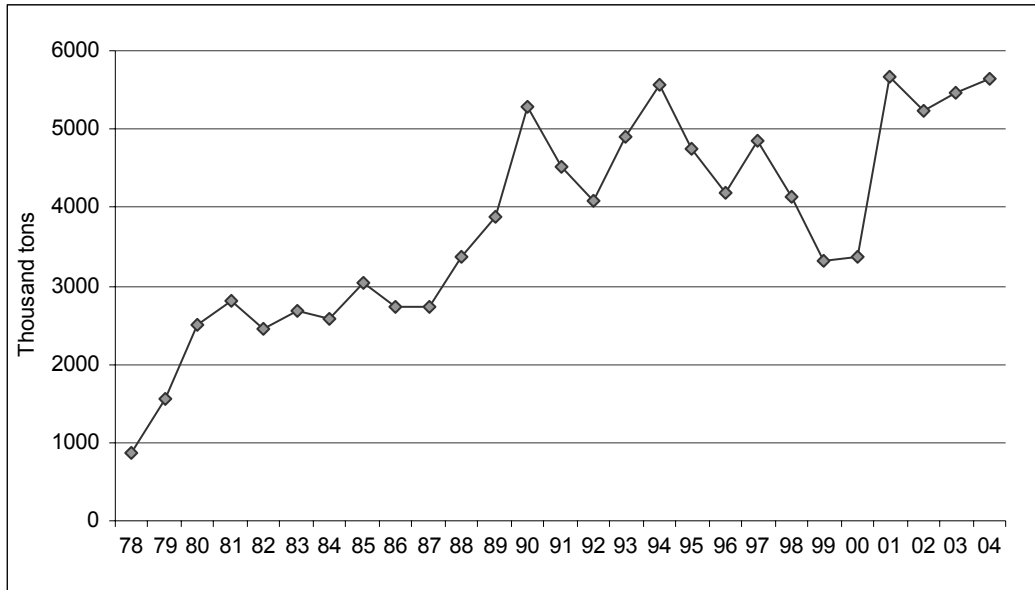


Figure 12. Development of the Transit Traffic via Finnish Ports (Merenkulkulaitos 2005)

According to the figures in Table 12, the eastbound transit is increasing while the westbound transit is decreasing. This can be explained by the growth of the Russian economy; there is need for valuable products like cars, televisions etc. Finland has the capability to handle and deliver these kinds of products. Table 12 also demonstrates how the transit traffic is divided. While the eastbound and the westbound transit are quite the same in sea transit, there are clear differences between these two modes in rail and road transit.

Table 12. Volumes of Russian transit via Finland in 2003-2004, thousand tons (Gröhn 2005a)

Volume of transit traffic	2003	2004	Change
Sea total	5469	5631	+3.0 %
Eastbound	2207	2638	+20.0 %
Westbound	3262	2992	- 8.0 %
Rail total	3194	3201	+0.2 %
Eastbound	202	234	+16.0 %
Westbound	2992	2967	-1.0 %
Road total	2243	2591	+15.5 %
Eastbound	2127	2490	+17.0 %
Westbound	116	101	-13.0 %
Eastbound total	4536	5362	+18.0 %
Westbound total	6370	6060	-5.0 %

Though it seems that especially the rail and road transit are clearly specialized in either westbound or eastbound transit, there are also other possible routes. Kilpeläinen (2004, p. 11) states four different transit routes (see also Figure 13):

- 1) Traffic from a 3rd country to Finnish ports and leaving to Russia by road or rail.
- 2) Traffic from Russia by road or rail to Finnish ports and then leaving by ship to a recipient in a 3rd country.
- 3) Traffic from Russia to a Finnish logistics center by the Trans-Siberian Railroad (TSR) and leaving back to Russia by road or rail after value-add operations.
- 4) Traffic from a 3rd country to Finnish ports and continuing to Russia usually by a smaller ship.

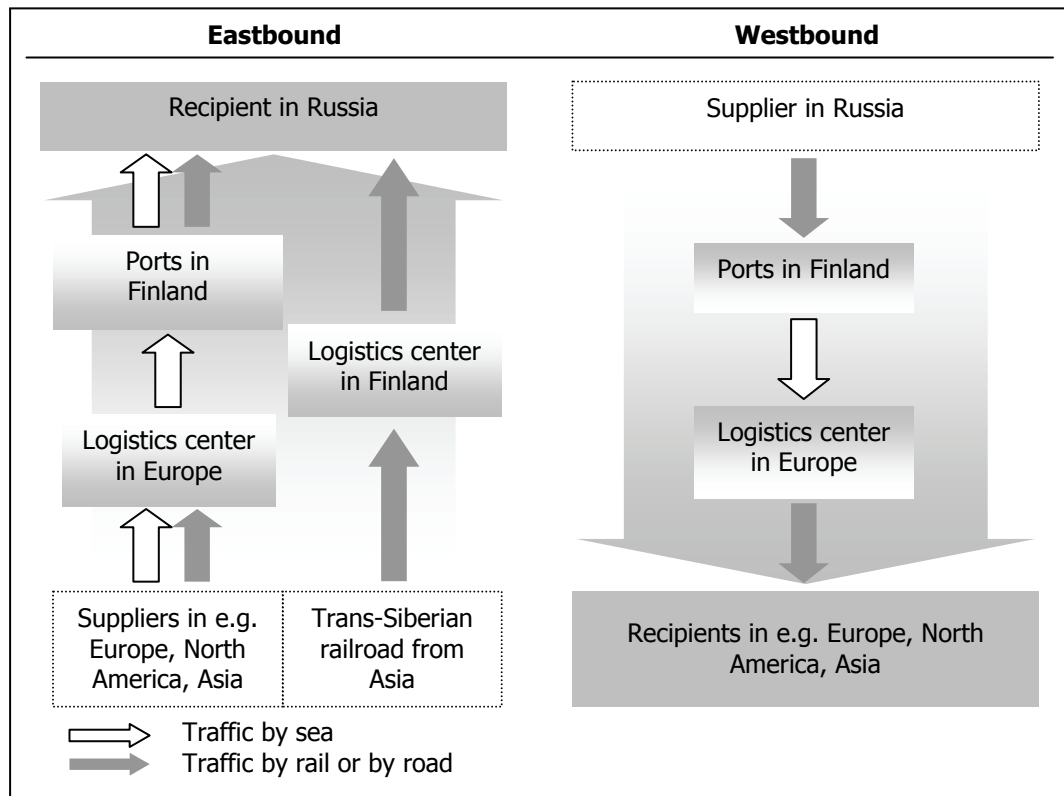


Figure 13. Basic Structure of Russia-related Transit Corridors via Finland

In the westbound transit the goods usually come from Russia by rail and are then shipped forward via Finnish ports. In the eastbound transit the goods arrive by sea to Finland and then get transported by trucks to Russia. The increasingly used TSR route (see Figure 14) can cause a change into the current situation while the fourth listed option, sea to sea transit, might disappear due to the increased processes in the ports of the Baltic States and around St. Petersburg. There is also new funding for the Trans-Siberian Highway, a project that started already in the 1960s (Gillian 2004). With the help of the European Bank for Reconstruction and Development (EBRD) the highway is supposed to be finished in 2008.

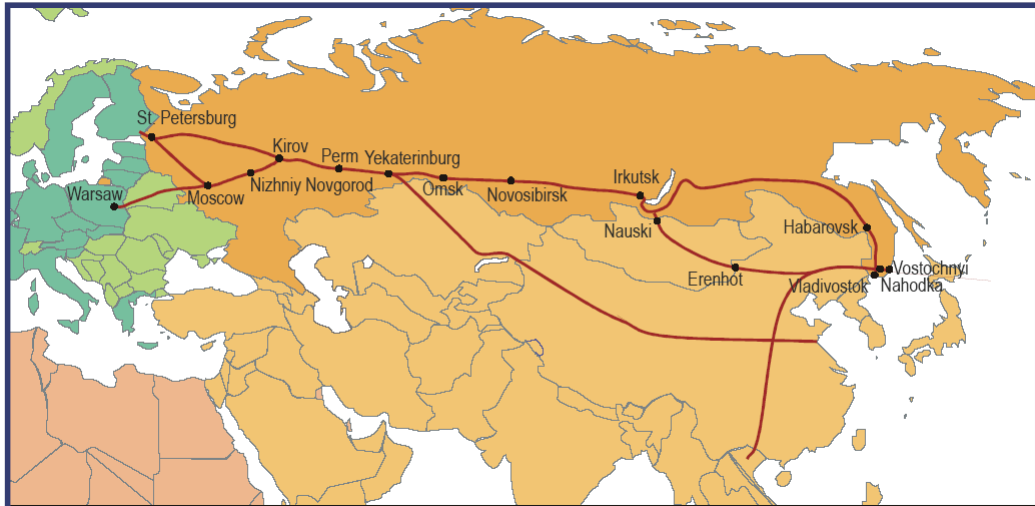


Figure 14. Trans-Siberian Railroad (MINTC 2005b)

Besides these four transit routes there is also some air transit traffic. The air transit forms about one percent of the total transit in weight but presumably more in value – usually products transported by aircrafts have a smaller size and a higher value. Unfortunately, according to Timo Järvelä from the Civil Aviation Administration of Finland there are no official statistics for the air transit. However, in a research report made by Euroavia it was mentioned that of the import air cargo arriving in Helsinki about 10,000-13,000 tons are actually in transit to Russia. Järvelä said that this is the best estimate for the air transit volumes. (Comén 2004; Järvelä 2005)

3.4.2. Competing Routes for Russian Related Traffic

There are several possible routes in the transportation between the EU and Russia (see Figure 15). The “Motorway of the Baltic Sea” is the most important route, covering 40 percent of all Russian foreign trade. This “motorway” is used by Finnish, Russian, and Baltic ports. The popularity of sea routes is based on the majority share of liquid bulk goods, which mainly use pipe and sea as transport modes. From the land routes the Germany – Poland route, which goes through Belarus as well, is the most important one. (MINTC 2005b, 44, 51)



Figure 15. Alternative Routes between the EU and Russia (MINTC 2005b)

The Ministry of Transport and Communications Finland has published a report called *Current status and development outlook for transport connections between the EU and Russia* (Mintc 2005b). The publication contains the alternative routes for goods traffic between the EU and Russia. They are described briefly in Table 13. The table contains the basic characteristics of the following competing routes: the land route from Germany via Poland to Russia and the ports of the Baltic Sea in Finland, Russia and the Baltic States. The Siberian Railroad is also mentioned, though it can connect to every other route. However, its importance in the traffic between Asia and Europe could be strong in the future, if it were updated and utilized correctly.

The infrastructure in the Baltic ports fits well with the traditional Russian trade articles; these ports were in active use in the Soviet Period. Because a large share of the traffic via Baltic ports affiliates with Russia, the authorities in Baltic countries have lowered the tariffs for Russian traffic in order to maximize its growth. Also due to the renovations made in the ports in 1990s, the transport and logistical services are better in the Baltic States than in Russia. (Hernesniemi et al. 2005, p.154)

Table 13. Alternative Routes between the EU and Russia (MINTC 2005b, p. 48, 52, 89-103)

Route	Characteristics
Germany-Poland	<ul style="list-style-type: none"> • Moscow – Minsk – Warsaw – Berlin, road and rail • Extension to the Trans-Siberian railroad to Europe • National significance for Russia and Belarus • Traffic jams in Poland and Moscow, border crossing problems between Russia and Belarus • Different railroad gauge in Poland and Belarus, automatic rail gauge change system in development
Russian ports	<ul style="list-style-type: none"> • Connection to the main pipeline network • See the ports section in Chapter 5.4.3 for a more extensive analysis
Baltic ports (see the maps of the Baltic States in appendix 1)	<ul style="list-style-type: none"> • Tallinn, Riga, Ventspils (Latvia), Liepaja (Latvia), and Klaipeda (Lithuania) • Good land connections to Russia • Concentrated on bulk products • Less developed container handling capabilities • Environmental protection problems
Finnish ports	<ul style="list-style-type: none"> • Constant scheduled line to Europe • Efficient ports, developed environmental issues • Good land connections to Russia, despite some capacity problems • Higher direct costs
Trans-Siberian railroad	<ul style="list-style-type: none"> • Fast connection from Asia to Europe • Infrastructure in need of update when traffic increases • Lack of container flat cars • Lack of confidence, old habits of using sea routes

The following table describes the development of traffic in the Russian and Baltic ports. The largest ports are St. Petersburg, Tallinn and Ventspils. St. Petersburg and Tallinn have almost tripled the cargo turnover between 1995 and 2003. Though these statistics do not directly tell the amount of Russian related cargo in the Baltic ports, they give some estimation of the development trends. The largest port of Finland, Sköldvik in Porvoo, had a turnover of 14.1 million tons in 2003 (Merenkulkulaitos 2005). Six of the ports listed below exceeded that turnover. The Port of Helsinki, the second largest port in Finland, would have been placed only ninth in this ranking.

Table 14. Total Freight Turnover in Russian / Baltic Ports (SPK 2005)

Seaport	Annual traffic, million tons			Change, %	
	1995	2002	2003	02-03	95-03
St.Petersburg (RU)	17.1	42.7	42.0	-1 %	146 %
Primorsk (RU)	0	12.4	17.7	43 %	n/a
Kaliningrad (RU)	4.6	9.5	12.7	34 %	176 %
Tallinn (Muuga) (ES)	13.0	37.8	37.7	0 %	190 %
Ventspils (LA)	29.6	28.7	27.4	-5 %	-8 %
Riga (LA)	7.4	18.1	21.7	20 %	194 %
Liepaja (LA)	1.4	4.3	4.9	13 %	247 %
Klaipeda (LI)	12.7	19.7	21.2	7 %	67 %
Butinge (LI)	0	6.1	10.7	76 %	n/a

Figure 16 shows that the general Baltic Sea traffic via the main ports of Russia and the Baltic States more than doubled from 86 million tons in 1995 to 196 million tons in 2003. The growth in the Finnish ports was smaller; the total volume grew from 70 million tons to 91 million tons. The trend seems to be obvious – the overall sea transport in the eastern traffic in the Baltic Sea grows and the majority of the growth is transported via the ports of Russia and the Baltic States.

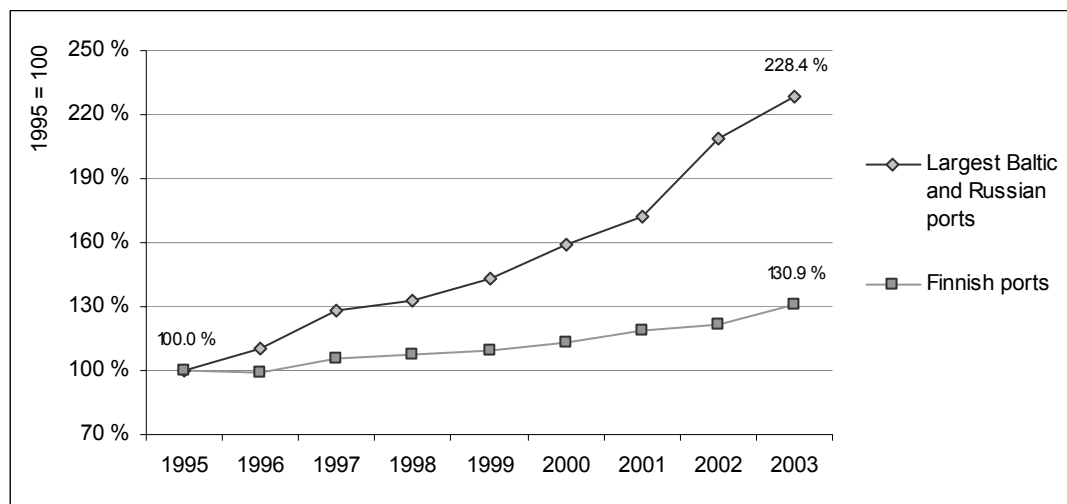


Figure 16. Development of the Baltic Sea Traffic via Certain Russian and Baltic Ports (same as listed in Table 14) Compared to the Finnish Ports (SPK 2005; Federley 2005)

3.4.3. Border Stations on the Finnish-Russian Border

In 2004 the total amount of goods crossing the Finnish-Russian border was 15.3 million tons by railroad and 7.0 million tons by road (Gröhn 2005a). Of the Finnish border stations (see the map in Figure 11, page 32) Vaalimaa is the most congested one when it comes to road traffic. The *Northwest Russian Transport Logistics Cluster: Finnish Perspective*

congestions are mainly caused by empty transit trucks returning to Finland. After its internationalization, Imatra has grown and grabbed some traffic from Nuijamaa as hoped and planned, says Tommi Kivilaakso, the head of Eastern Customs District in Finland. (Pohjalainen 2004)

In the rail traffic, the Russian rail tariff policies have indirectly taken some of the share of the rail traffic in Vainikkala, by moving traffic to the new Russian oil ports in the Gulf of Finland. (Pohjalainen 2004). Imatra has become stronger also in the rail traffic. There is a plan to build a high quality logistics center for heavy industry in Imatra – in the first stage a new private railroad track will be built in 2005. The track will support the increase of raw wood imports in the EU's most important raw wood import railroad junction. The project has received financing from Interreg and is done in cooperation with a Russian railroad operator, October Railroads. (Laaninen 2004)

Graphs of the total road and rail traffic between Finland and Russia at the top-four border stations during 1995-2004 are presented in appendix 2. Vaalimaa is the clear leader in the road traffic with its share of 41 %, and the second largest border station is Nuijamaa with a share of 26 %. Imatra has grown during the past two years (share of 15 % in 2004) and thus climbed as the third before Niirala (14 %) in 2004. In the rail traffic, almost half of the freight is transported via Vainikkala. Its share in 2004 was 47 %, while both Imatra and Niirala had each a share of about 20 %. (Gröhn 2005a)

According to the statistics from 2004 (see Table 15 & appendix 3 for the complete time series 1995-2004), most of the transit traffic in tons went through the port of Kotka (34 %). The second largest port was Hamina (27 %), overtaking Helsinki (26 %) in 2004 compared to 2003. Hanko had 7 % of the total transit traffic. Only Hamina and Hanko have been able to increase their absolute traffic over a longer period of time, while Helsinki lost a little of its traffic in 2004 after a longer growth period. In the total transit amounts, Kotka suffered from traffic decrease between 2002 and 2004 – it increased its traffic in the eastbound transit but lost some from the westbound traffic. The port of Kokkola located on the Gulf of Bothnia is a special case among the Finnish ports in this study – the amount of Russian related transit traffic cargo via Kokkola has varied a lot. According to Witting, the managing director of the port of Kokkola, iron ore pellets are the cause of the present growth in the transit traffic (Witting 2005). He also says that the traffic figures of 2004 are likely to grow also in 2005, but the future is unsure.

Table 15. Transit Volumes via Finnish Ports and Border Stations (Gröhn 2005a)

Transit volumes via ports & border stations	2003	2004	Absolute growth
East + west ports total (in thousand tons)	2,203	2,638	20 %
Kotka	38 %	34 %	-9 %
Hamina	26 %	27 %	7 %
Helsinki	28 %	26 %	-5 %
Hanko	6 %	7 %	25 %
Kokkola	0.3 %	5 %	1602 %
Turku	2 %	2 %	10 %
Rauma	0.2 %	0.2 %	2 %
Eastbound border stations total (road)	2,127	2,490	17 %
Vaalimaa	60 %	64 %	24 %
Nuijamaa	37 %	29 %	-6 %
Imatra	2 %	6 %	216 %
Niirala	0.3 %	0.2 %	-35 %
Westbound border stations total (rail)	2,992	2,967	-1 %
Vainikkala	99 %	82 %	-18 %
Vartius	0.1 %	14 %	22655 %
Niirala	1 %	5 %	625 %
Imatrankoski	0.03 %	0.01 %	-76 %

The largest border station in the eastbound transit was Vaalimaa (64 %), followed by Nuijamaa (29 %). The traffic via Vaalimaa increased steadily during 1999-2004. Imatra has also grown strongly since 2002 and has now a share of 6 %. In the westbound transit, the largest border station was Vainikkala with a share of 82 %; it has however lost some of its share. Vartius was the second largest border station (14 %) being ahead of Niirala (5 %). The traffic via Vartius was significantly low in 2003, making the absolute growth figure so enormous in 2004. (see appendix 3 for the complete time series in 1995-2004)

3.5. Finnish Strategy for Russian Trade Logistics

The Finnish Ministry of Transport and Communications commissioned a report concerning the Russian related logistics in 2004. The resulting publication, *The Finnish-Russian Logistic Partnership* (Hernesniemi et al. 2005), included a strategy for Finnish companies in the Russian trade logistics. The strategy was based on three issues: (1) efficiency of Finnish transport, (2) development of Finland as a logistics center, and (3) expansion to Russia.

The first issue is the development of efficiency. To be able to compete against the cheaper countries, the Finnish actors need to be highly efficient. The know-how of the different transport modes should

Northwest Russian Transport Logistics Cluster: Finnish Perspective

create synergies for the transport operations, when operated seamlessly. In shipping, efficient planning is essential. The import and export transports should be planned so that they support each other – meaning the use of return cargo. Selective investments in actual shipping infrastructure should be made to enhance the operations. Extensive use of information systems is one of the key elements – also benchmarking of the operations in Finland and also among the competitors must be used to find the areas in need of enhancement. (Hernesniemi et al. 2005, p. 75)

The second issue is the further development of Southern Finland as a logistics center for imports and exports of high-value goods. Collaboration between Finland and Russia is needed, especially in customs related topics. The logistics centers should be directed to the transport between Finland and St. Petersburg and its surroundings. The development of VAL services is essential; moreover as Russia develops, the upcoming investment projects could create a significant increase in the logistic demand. (Hernesniemi et al. 2005, p. 77)

The third issue is the expansion of Finnish logistics companies to the Russian markets. The need of logistics services in Russia grows as the GDP grows. Also while the Finnish industries invest in their operations in Russia, the logistics companies could take an advantage of their existing customer relationships. The strategy of The Finnish Ministry of Transport and Communications states few possible sectors, where the Finnish logistics actors might be strong in Russia. These include forest and electronic industry transports, as well as high-value product transports. This option demands changes in attitudes, but offers a great opportunity. (Hernesniemi et al. 2005, p. 79)

3.6. Future Forecasts in Finnish-Russian Logistics Operations

Hernesniemi et al. (2005, p. 14) have compiled a forecast concerning the growth of the Finnish logistics services in Russia, see Table 16. The export forecast is based on the assumption that the Finnish products will preserve their market shares in Russia. In the imports, the forecast depends on the future use of Russian raw materials in the Finnish industry. In transit, if the Russian GDP growth is strong enough, Finland can preserve its market shares in the Russian related transit because it lacks supply constraints. But if the growth of the Russian GDP is slower, and the Russian and Baltic operators have time to adapt their capacities, Finland might lose its market share to them.

Table 16. Growth Prospects for Finnish Logistics Services in Russia during 2004-2010 (Hernesniemi et al. 2005, p. 14)

Russian GDP Scenarios	Export transport	Import Transport	Eastbound Transit	Westbound Transit
6 % Annual growth	10 %	5 %	10 %	5 %
4 % Annual growth	6 %	3 %	0-6 %	0-3 %
2 % Annual growth	3 %	1 %	decrease	decrease

In the container traffic Finland has been quite an important actor from the Russian point of view – the share of Finland in the total Russian container traffic was almost one fourth in 2002. Nevertheless, the role of Finland is going to change; according to a study by a private consulting company Transcare (cited in Kilpeläinen 2005, p. 17), the share of Finland will drop to less than eight percent by 2012 (see Figure 17). According to the forecast, the growth will be the largest within Russia's own ports.

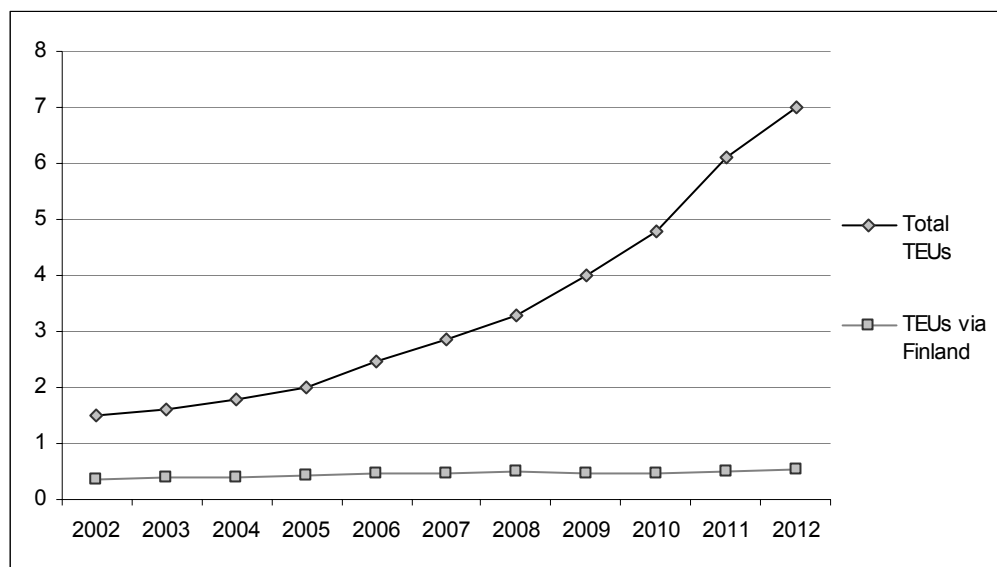


Figure 17. Forecast of the Russian-related Container Traffic in 2002-2012 (Kilpeläinen 2005)

During the forecast period 2002-2012 the overall amount of Russian container traffic will rise almost five-fold from 1.5 to 7 million TEUs. Though Finland will lose some of its share of the total container traffic, the massive total growth ensures that the absolute amount of container traffic via Finland will grow by about 50 %. In 2002, the yearly container traffic via Finland was 350,000 TEUs. According to the forecast, the yearly container traffic is expected to grow up to 530,000 TEUs by 2012.

4. Analyzing the Competence of a Cluster

"A cluster is a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities. The geographic scope of a cluster can range from a single city or state to a country or even a network of neighboring countries," (Porter 1998, p. 199)

The concept of cluster was first introduced in the 1980s, when it was used to describe the entirety of a company's business operations (Hernesniemi et al. 1999, p. 4). In the end of the 1980s it was broadened to describe whole business branches, while in 1990 Michael Porter brought the international perspective to the cluster concept in his book *The Competitive Advantage of Nations*. This chapter first explains why Porter's model is used in this study, and after that the original model is presented. In the end, some critique regarding the model is offered.

4.1. Choosing a Model

To analyze the competitiveness of a certain agglomeration, in this case the Russian transport logistics cluster, it is convenient to use some kind of a model in the process of structuring detached information into a solid analysis. For this study, the Diamond Model by Michael Porter has been selected. It is a model that can be used to analyze the competitiveness of a firm, a cluster or whole nations. The Diamond Model is widely used in the competitive analysis of different clusters – after its publication in 1990, it has been used in several countries. Moreover, ETLA, The Research Institute of the Finnish Economy, has used this model for its previous analysis of Northwest Russian clusters. According to Penttinen (1994, p. 67), Porter's model is a suitable tool for analyzing the competitive advantage of an industry, but it must be completed with modifications necessary for a specific industry in a specific country.

4.2. Analyzing Competence – The Diamond Model

Porter has created an extensive model to describe why certain companies operating in certain countries are successful. Porter's model is based on four broad attributes which form the ground for a nation to be or not to be fertile in the creation of competitive advantage. These four interdependent determinants are *Factor conditions*, *Demand conditions*, *Related and supporting industries*, and *Firm strategy, structure and rivalry*. In the original model there were also two additional sources of competitive advantage: *The Role of Chance* and *The Role of Government*. (Porter 1990, p. 71, 124-126)

The Factor conditions category includes the production factors which each nation possesses. Porter groups broad terms such as land, labor, and capital to the following categories: human resources,

physical resources, knowledge resources, capital resources and infrastructure (see Table 17). Every nation has its own strengths and weaknesses in the factor conditions but the crucial question is how efficiently, effectively, and where the factors are deployed. It is also important that human resources, knowledge and capital factors move from nation to nation quite easily – the important issue is to create a sustainable environment and maintain these factors. However, few seemingly favorable factors can be disadvantageous; e.g. automation may not develop enough if the functions can be done by cheap labor force. (Porter 1990, p. 74-76)

Table 17. Categories in Factor Conditions (Porter 1990, p. 74-75)

Category	Factors
Human resources	Quantity, skills, and cost of employees. Includes also working hours and work ethic.
Physical resources	Amount, quality, accessibility, and cost of a nation's natural resources. Also climate, location and geographical size can be included.
Knowledge resources	Scientific, technical, and market knowledge residing in universities, literature, research and statistical centers etc.
Capital resources	Capital in various forms. Although globalization has made the markets more similar, there are still differences between the capital markets in different countries.
Infrastructure	Type, quality, and user cost of infrastructure including industry and employee point of view.

The factors can be basic or advanced, and generalized or specialized – factors can also be created or inherited. Generalized and basic factors are easier to obtain than specialized and advanced ones. For example land and geographical location are often inherited generalized basic factors. However, the created advanced factors, such as high tech infrastructure, are usually the most important ones to a nation's competitive advantage. When these are specialized on a certain industry, the competitive advantage is harder to imitate by other nations. The key issue is to maintain continuity in investments in order to create and update the specialized advanced factors. (Porter 1990, p. 76-81)

The Demand conditions include the nature of domestic demand formed by local and export demand. It can be explained by three broad attributes; the composition of home demand, the size and pattern of growth of home demand, and the mechanism by which a nation's domestic preferences are transmitted to foreign markets (see Table 18). A demanding customer is good for the cluster. Porter also states that the quality of home demand is more important than the quantity. The interplay of

different attributes is important – but the most important topic is the dynamics of home demand. (Porter 1990, p. 86)

Table 18. Demand Condition Attributes (Porter 1990, p. 86-99)

Attribute	Characteristics
Home demand composition	It is important to recognize the buyers' needs before foreign rivals. Home buyers can also boost the development by pressuring local firms to innovate. The closeness of home buyers makes the development and interaction easier. Porter divides the home demand composition in the following characteristics: <ul style="list-style-type: none"> • Segment Structure of Demand • Sophisticated and Demanding Buyers • Anticipatory Buyer Needs
Demand size and pattern of growth	<ul style="list-style-type: none"> • There are arguments about the role of a large demand in home markets: is it automatically a benefit for a nation? On the other hand it enables economics of scale but on the other hand it might diminish the willingness to export. • The situation where there are many smaller buyers instead of a few larger ones is preferable as it boosts the dynamics of markets. • Rapid growth is important because it reflects to rapid investments. • The sooner the new demand arises, the better the domestic industry can prepare for it and thus gain advantage against foreign actors. • The earlier the markets are saturated the more innovation is needed to grow – and thus competitive advantage is gained.
Internationalization of domestic demand	Mobile or multinational local buyers bring international characteristics to the domestic markets. Influences on foreign needs appear when foreigners get trained in a nation and thus learn the domestic markets and their supply.

The Related and Supporting Industries must also be competitive to be able to provide the needed quality level. The specialized supplier industries must effectively utilize their inputs to provide more value. But particularly the linkages and coordination between each industry must be strong to enable close innovation and upgrading of functions. The same goes to the related industries; sharing of activities boosts the involved industries and might create new competitive industries. The greatest advantage from the related and supporting industries is gained when these act internationally. (Porter 1990, p. 100-107)

Firm Strategy, Structure and Rivalry include the creating, organizing and managing characteristics of firms as well as domestic rivalry. The managing of firms is to some extent inherited and differs from nation to nation and there is no one appropriate solution; it depends on the type of industry which strategy and structure fits best. However, labor management is quite important in all industries. Also managerial attitudes play a decisive role in many issues. Both the company's and the individuals' goals, aligned with the sources of competitive advantage, are an important part of strategies when there is devoted commitment to them. Porter also found out that domestic rivalry is

one of the main aspects when describing the competitiveness of an industry – it causes constant improvement and innovation. The more firms there are the more rivalry there is. Thus some “national champion”, a firm which rules the domestic markets, might not survive in global markets. (Porter 1990, p. 107-124)

The Role of Chance reflects unexpected chances in economy. They can be technological discontinuities, financial issues, currency changes, price shocks, political decisions, or even wars. They can be positive, in which case competitive advantage can be created, or negative, when some advantage might be lost. (Porter 1990, p. 124)

The Role of Government is to influence the four main parts of the diamond – it can have a positive or negative influence on each of the determinants or it can be influenced itself by some of the determinants (Porter 1990, p. 127). The government can for example affect the amount of available capital by attracting or forbidding investors or it can affect the employees at the grass root level by offering a good living environment. In Russia the government should be divided into federal and local governments – federal government creates institutional and legal framework, while local government could improve the competitiveness of locally important industries (Dudarev et al. 2000, p. 10).

The above four determinants together with the two external factors is an interactive system. The competitive advantage is formed of the dynamic interaction between these parts – the parts reinforce each other. However, in 1991 Dunning (cited in Penttinen 1994, p. 57) added a third external force to the model, *The International Business Activity* (IBA). This updated model has been used in recent Finnish and Russian cluster analysis (e.g. Hernesniemi et al. 1999; Boltramovich et al. 2003). Moreover, in this study the model could be supplemented with two more external factors: *Economic Transition* (as in Dudarev et al. 2000) and *The Role of Multinational Organizations* such as the EU and the WTO. This Russia-adjusted model is presented in Figure 18.

International Business Activity (IBA) gives competitive advantage to companies through their internationalization process. These companies can locate the production facilities in places where the most competitive advantage is gained and thus get access to and benefit from several competitive national diamonds simultaneously. (Boltramovich et al. 2003, p. 5; Penttinen 1994, p. 57-58) When a country is in an **Economic Transition** the reforms can cause positive, but also negative impacts to the industries. During the transition period many restrictions are cleared, causing new business opportunities to open. This will also reveal possible sources for competitive advantage. A good example of an industry that has benefited from the reforms are the food and beverages companies. The **Foreign Direct Investments (FDI)** can be considered as an important factor in the transition and

development of Russia. The Russian government and domestic companies are not necessarily able to finance all the investments needed to renew the infrastructure. (Dudarev et al. 2000, p. 10-12)

Dudarev presents eight key areas which are included in the transition process: liberalization of prices, free trade, new legislative system, privatization, market infrastructure development, tax reforms, autonomy of the Central Bank, and stabilization of the monetary system. (Dudarev et al. 2000, p. 10-12) Besides the transition process, Russia is negotiating with the WTO. As the recent discussion concerning the Russian WTO membership has illustrated, there are many issues that need to change if Russia wishes to join the organization. Besides the WTO, also the EU has some influence on Russia. These organizations affect indirectly all the determinants in the model. The author sees that these actors can be identified in some extension like the role of the government, and they should be included in the adjusted “diamond” model as **The Role of Multinational Organizations**.

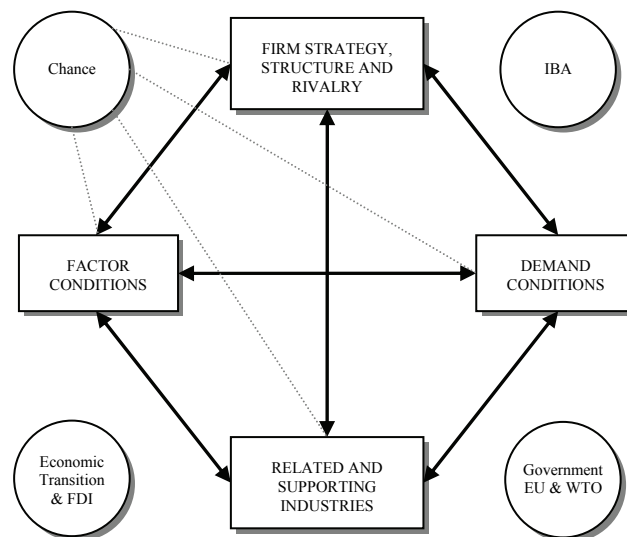


Figure 18. Russian Adjusted “Diamond” Model ⁷ (Dunning J. H. 1991 cited in Penttinen 1994, p. 58; Dudarev et al. 2000, p. 9; author)

The Diamond Model does not itself include all the necessarily theories needed in analysing the competitiveness. Viitanen et. al (2003, p. 22) have gathered some strategic management, business administration, and economic science theories, that are connected to the four main components in the

⁷ Every external factor is connected to every determinant like “chance”.

Diamond Model. These theories are listed in the table below. The theories themselves are not presented here, however.

Table 19. Theoretical Bases for the Diamond (Viitanen et. al 2003, p. 22)

Component	Theoretical bases
Firm strategy, structure, rivalry	Economic sciences of a branch, game theories
Factor conditions	Traditional and new growth theories, the new economy
Demand conditions	Markets of pure competition, organized markets, user-producer relations, innovation theories
Related and supporting industries	Organization and network theories, cost of stagnation-theory

4.3. Cluster Chart

What is the cluster like in practice? In order to help understand the basic structure of a cluster at a glance, one has to describe it in a compact way. The cluster chart is commonly used to describe a cluster. It compiles together separate but closely interrelating elements affecting a cluster. It also shows the interconnections between these elements. Below the elements are briefly introduced, after which the cluster chart is presented in Figure 19.

- *Primary Goods*: the globally most competitive goods the cluster products.
- *Specialty Inputs*: the main factors of the factor conditions.
- *Technologies*: the main technologies, machines, and equipment which are used by the core companies of the cluster.
- *Related and Supporting Industries*: the sectors whose products are used directly or indirectly in the process of making the primary goods.
- *Consumers*: the main consumers or consumer groups of the cluster.

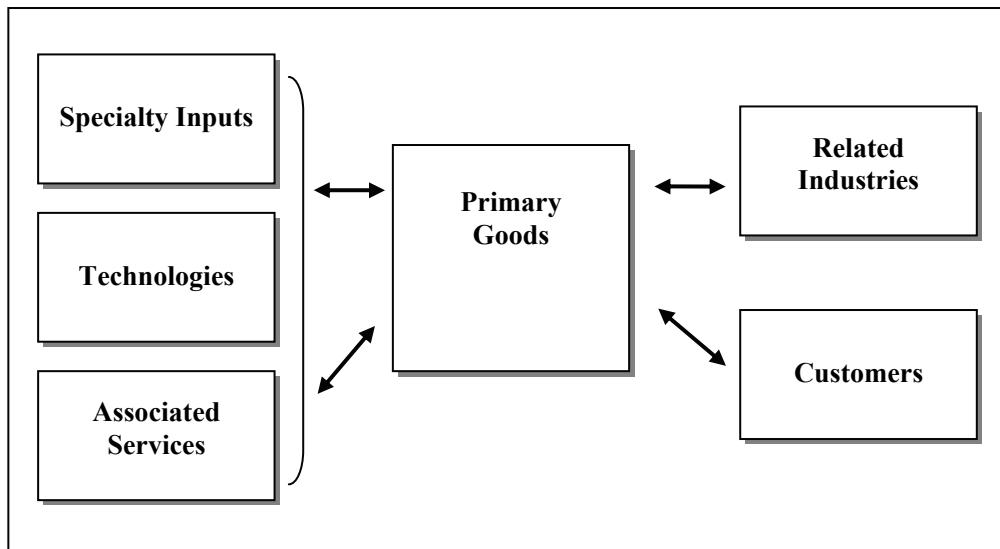


Figure 19. Cluster Chart (Dudarev et al. 2004, p. 14)

5. Northwest Russian Logistics Cluster

Transportation connections have an important role in the economy of Northwest Russia in the form of trade and transit traffic, though the main infrastructure is concentrated in relatively small areas. While economic growth is expected to occur mostly in the service sector, the growth of the manufacturing sector is also strong, meaning increasing demand for transportation (Ministry of Transport 2004, p. 47; The World Bank 2004a, p. 4). The main transport agglomeration in Northwest Russia is St. Petersburg with its sea and river ports, railroad and highway nodes, and the largest airport in the NWFD.

5.1. Cluster Identification

The Northwest Russian logistics cluster can be considered as a potential cluster, when the classification of clusters by Michael J. Enright (cited in Dudarev et al. 2000, p. 31) is used. The primary services for the Northwest Russian logistics cluster are transporting and handling of goods and passengers, see the cluster chart in Figure 20.

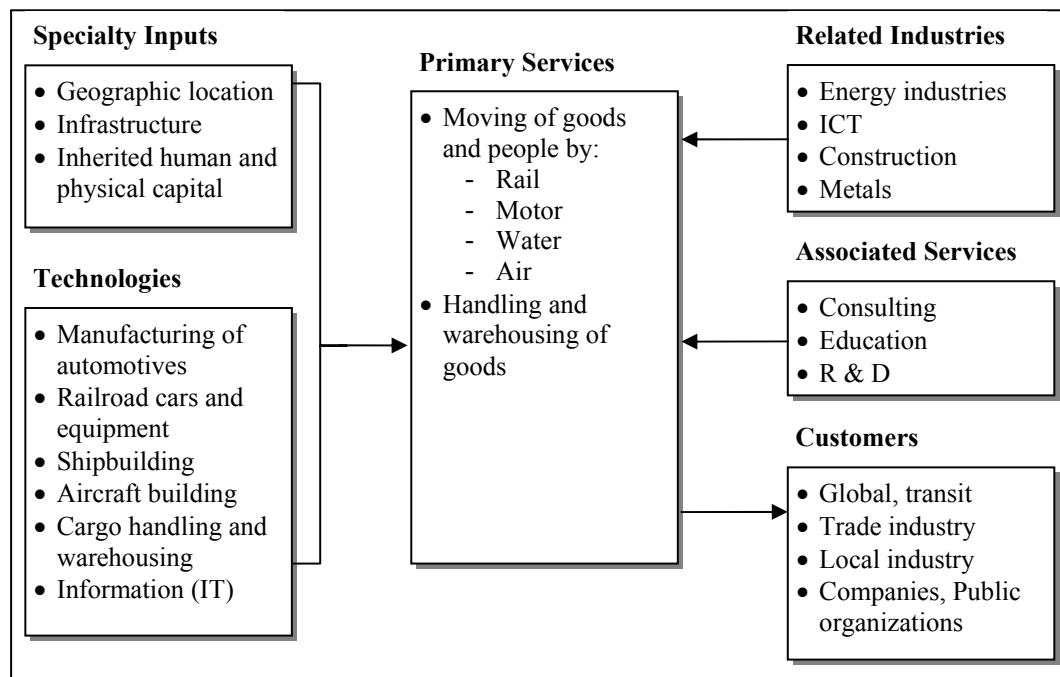


Figure 20. Logistics Cluster Chart (Competitiveness.ru 2004b & author)

The Russian logistics cluster in the form of transportation is rather-well developed. The basic infrastructure exists but suffers from aging and has only now been started to develop to match the new market conditions. It is also distributed the same way as the population density – covering mainly the European part and Southern Siberia, see Figure 21. The links between the actors are being formed and thus the competitiveness of the cluster is increasing. (Competitiveness.ru 2004b)

The geographical location, covering the largest area of all the countries in the world gives Russia an advantage especially in the transit traffic. However, the logistical service sector is underdeveloped. Russian exports have concentrated on raw materials and bulk products, which has slowed down the evolution of logistics services. The production of more industrialized products will affect the need of logistics services in the form of production optimization and distribution. (The World Bank 2004a, p. 3)

The transport system in Russia is specialized in lengthy routes and cargo carried by railroads. While the processing industries are located mainly in the European part of Russia and in Southern Siberia, the raw materials (oil, natural gas, metal ores, timber, etc.) are found in the Asian part of Russia. Thus the routes are long and costly and it takes a lot of time to carry the cargo from the source to the destination. To make the situation even harder, the climate in the raw material part is extremely severe and the population density is very low. This creates a situation where the logistical routes have to be well organized and resistant to weather conditions. Because of the harsh conditions, there are places not reachable by road but only by rail, inland waterways or by air. (Competitiveness.ru 2004b)

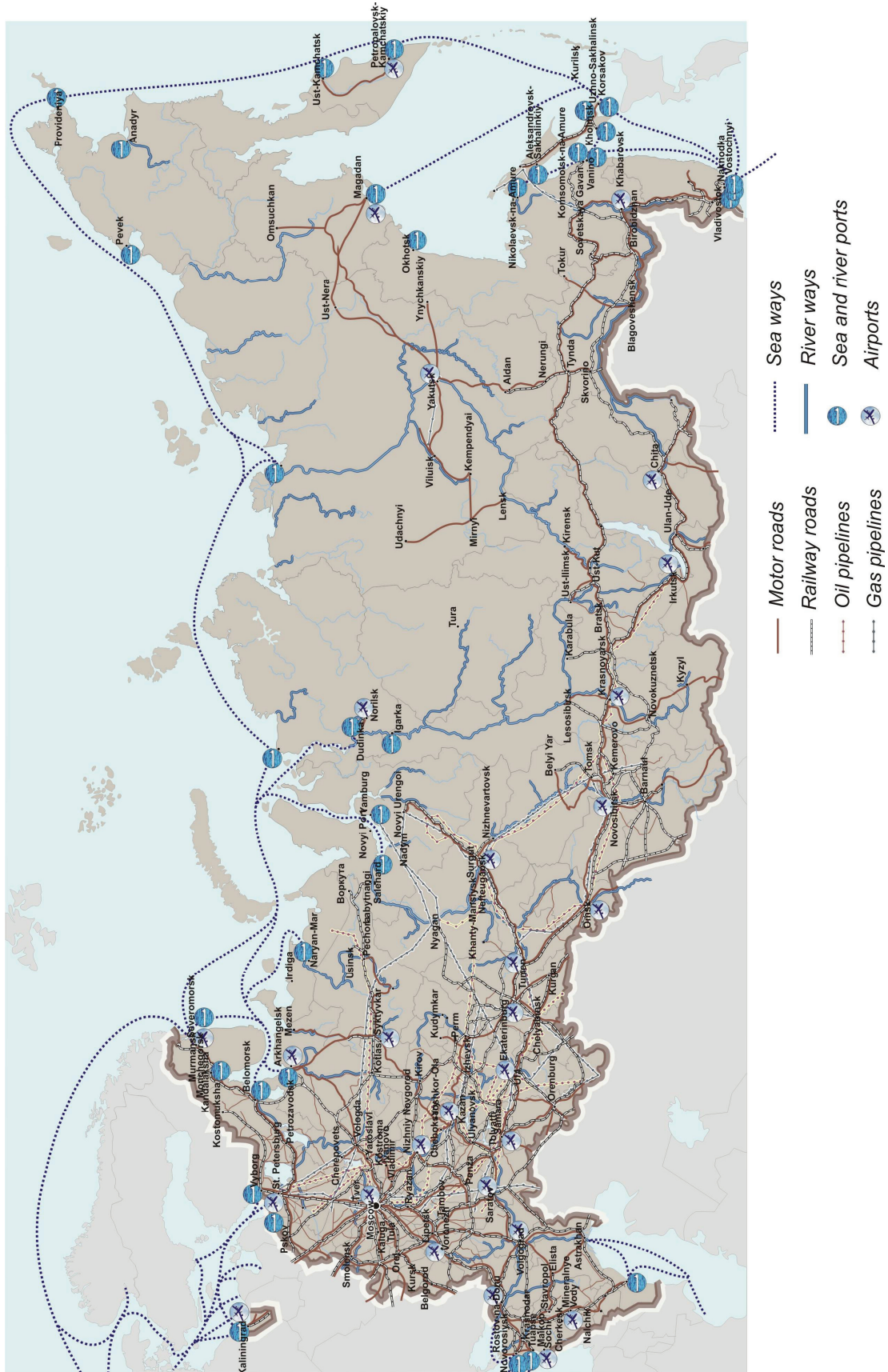


Figure 21. Transportation Infrastructure in Russia (Comptitiveness.ru 2004b)

5.2. History of Development

Already in the Novgorod period, before the 15th century, the development of the Russian transportation followed the development path of the overall economy and politics of Russia. In the 16th century, the geographical position of Russia changed when the direct connection to the Baltic Sea was lost. However, Peter the Great re-established that connection in the 18th century as St. Petersburg was founded – it became the main seaport for Russia. (Dudarev et al. 2002, p. 145)

The traditionally strong inland waterway structure of Northwest Russia was mainly replaced by railroads in the late 19th – early 20th when active building of railroads took place. Also the ice-free port of Murmansk was constructed to give access to the Barents Sea. In the Soviet Period the building of a highway network started, and also the pipeline and aviation transport modes began developing. (Dudarev et al. 2002, p. 145) Logistics as well as all the other business branches were fully state-controlled – the logistical operations were massively re-organized eight times during the Soviet Period (Rodnikov 1994, p. 5). The breakdown of the Soviet Union devitalized the freight traffic. In the whole CIS the freight transport declined by 59 percent during the years 1990-1996. In 1990-1997, railroad traffic alone decreased by almost 63 percent. (Land 2000, pp. 274-275) The transportation networks were planned to connect closely to the infrastructure in the Baltic States, which caused some problems after the Soviet period (Dudarev et al. 2002, p. 145).

Nowadays, the key node of the Northwest Russian transport cluster is the St. Petersburg area, while secondary nodes are the other large sea ports in Murmansk, Arkhangelsk, and Kaliningrad.

5.3. Key Figures

Transportation causes quite a lot of expenses to the industry. The share of transport costs from the total production costs is about 15-20 percent, while in developed industrial countries that figure is only 7-8 percent. The long distances are one reason for this, but also the underdeveloped infrastructure and transport system add extra costs to the industry. (Ministry of Transport 2004, p. 3)

5.3.1. Impact on the Northwest Russian Economy

The transport sector formed 7.3 percent of Russian gross value-added in 2003 (see Table 20). The figure is quite large, as for example in Estonia the share of the transport sector in the GDP was 5.7 % in 2002 (Tint 2003). The Russian transport sector employed 4.1 million persons in 2003, which is 6.3 percent of all Russian employees. The amount of employees has somewhat decreased from 1995, when there were 4.4 million of them. Fixed assets and investments in fixed capital have increased fast in the beginning of the 21st century – even faster than in other areas of economy, though they are now facing a small decline when compared to the whole economy of Russia. The transport sector has lost some of its share in the services provided to the public, though the absolute amount rose by 26

percent in 2002-2003. This can be due to the overall increase in services supplied to public. (Goskomstat 2004a, 2004b)

Table 20. Position of the Transport Sector in Russian Economy (Goskomstat 2004a, 2004b)

Parameter	Shares in percents		
	1995	2001	2003
Share in gross value-added	10.7	7.4	7.3
Employees	6.6	6.4	6.3
Fixed capital	12.7	29.0	28.8
Investments in fixed capital	13.2	20.7	18.0
Balanced financial result (profit minus loss)	12.0	9.4	6.3
Share of total services provided for inhabitants in Russia	28.0	25.3	22.9 ⁸

The Russian Ministry of Transport has made a forecast of the transport sector gross production development from 2000 to 2025 (cited in Hernesniemi et al. 2005, p. 120). According to this forecast, the passenger traffic will grow the most, raising its share from one fifth to one third of the total traffic (see Figure 22). Passenger traffic will triple its gross production from 7.3 to 30 million dollars (growth rate 311 %), while the freight traffic's share will "only" double from 28.4 to 60.1 million dollars (112 %). The total traffic will grow by 155 percent from 35.7 to 91.1 million dollars. All the amounts in this forecast are in the 2000 price level.

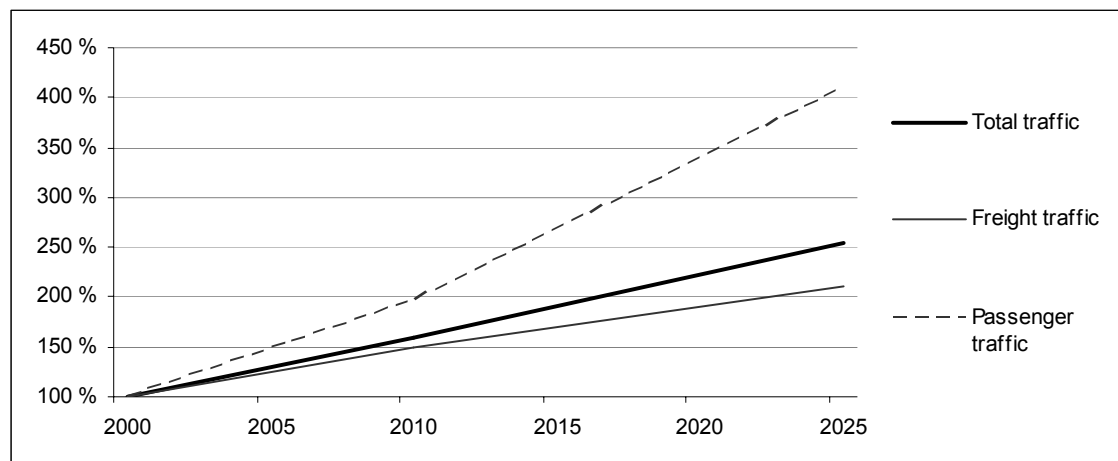


Figure 22. Development of Gross Production in the Russian Transport Sector, 2000 = 100% (Hernesniemi et al. 2005, p. 120)

⁸ Including forwarding services which were 1.3% in 2001 and 2.6% in 1995.

5.3.2. Different Transportation Modes

The shares of transportation modes are different depending on the used indicator⁹. It can be seen that the figures are divided more equally when measured by transported tons instead of freight turnover (in ton-kilometers), though by both categories the railroad transportation is by far the largest transportation mode (see Table 21). The absolute share of railroad transportation in the freight turnover is 91.2 percent and in transported tons 65.2 percent. The order of the other modes stays the same except for the road transportation. Its share is only the fourth largest (1.2 %) when measured in ton-kilometers but the second largest (27.5 %) in transported tons. This can be explained by the lengths of routes, which are notably shorter in road transportation than in the other transportation modes. (Goskomstat 2004b)

Table 21. Freight Turnover and Transported Goods in 2003 (Goskomstat 2004b)

Transportation mode	Freight turnover		Transported goods	
	Bn tkm	share	Mn tons	share
Railroad	1669	91.2 %	1161	65.2 %
Inland waterway	71	3.9 %	104	5.8 %
Maritime	65	3.6 %	24	1.3 %
Road	22	1.2 %	490	27.5 %
Air	2.7	0.1 %	0.8	0.05 %
Total	1829.7	100.0 %	1779.8	100.0 %

Between 2002 and 2003 the transport of goods grew by 3.8 %, pipelines excluded. Figure 23 shows that the development of total transported goods in tons have declined heavily from the 1992 level but have risen again after 1998, though there is one weaker year, 2002. As can be seen in Figure 24, the decline was mainly caused by the decline of road transportation. The total freight turnover, as well as the transported goods, has suffered a deep slope which came to head in 1998, but is at present in steady growth. (Goskomstat 2004b)

⁹ Federal Service of State Statistics of Russia has compiled statistics on transportation in publications “Russia in Figures 2004” and “Main Indicators of Transport Performances in Russia 2004” by measuring either transportation quantity or turnover. Quantity is measured by using tons/passengers as units when turnover uses ton-kilometers/passenger-kilometers. Value based method has not been used.

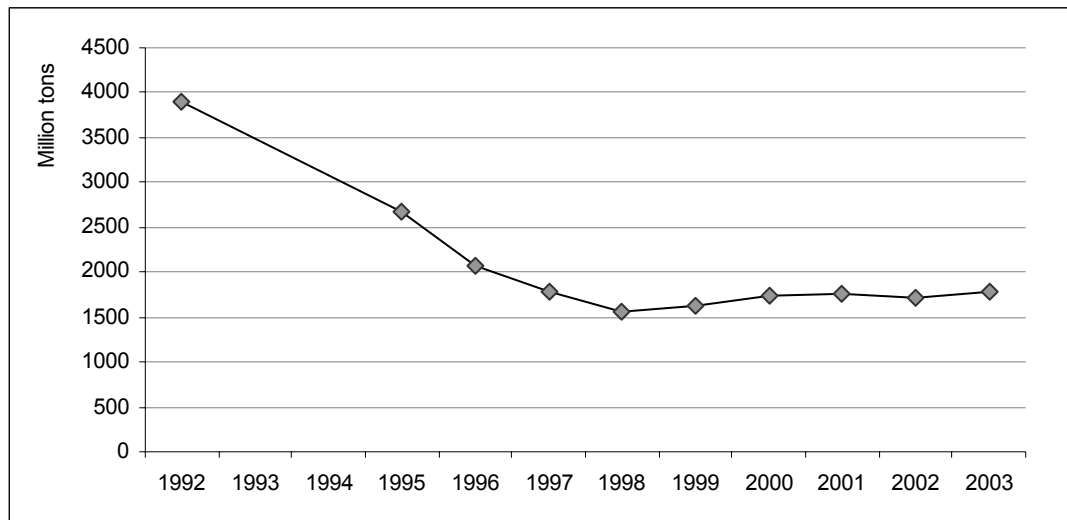


Figure 23. Total Transport of Goods in 1992-2003 (excluding pipelines, period 1993-1994 is estimated due to lack of data) (Goskomstat 2004a; Goskomstat 2004b; Competitiveness.ru 2004b)

In the transported goods, the biggest relative decliner has been the road transportation. It lost almost half of its share between 1992 and 2003, while railroads increased their proportion. Besides railroads, the aviation sector has slightly increased its relative proportion of the transportation. However, none of these sectors have gained back the actual amount of transported goods they had in 1992. (Goskomstat 2004a) The development of actual measures in freight turnover and transported goods during 1995-2003 is shown in appendix 4.

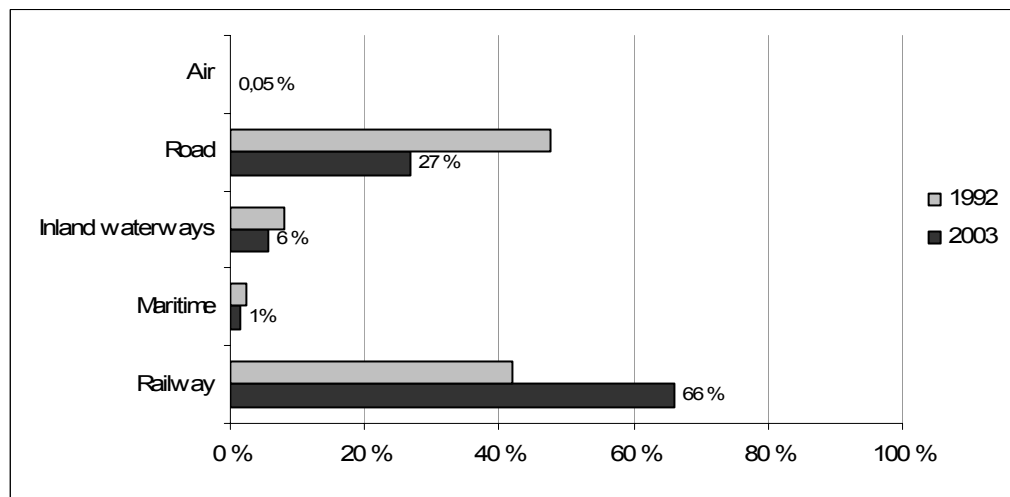


Figure 24. Structure of Russian Transported Goods by Transport Mode during 1992-2003 (share of total tons, Goskomstat 2004a)

The structure of freight turnover has changed significantly only within railroads and water (inland and marine) – the share of the railroads of freight turnover grew from 77.1 percent in 1992 to 91.2

percent in 2003 while the share water based transportation declined from 21.2 percent to 7.4 percent (see Figure 25). Due to this development, the railroads have strengthened their position as the most dominating mode of transport in Russia – but only if pipelines are excluded. The pipelines have the largest volume and a share of 55.4 percent of the whole Russian freight turnover while the share of the railroads is 40.7 percent. The aviation sector is the only sector which increased its actual freight turnover from 1.8 ton-kilometers in 1992 to 2.7 ton-kilometers in 2003. (Goskomstat 2004a; Goskomstat 2004b)

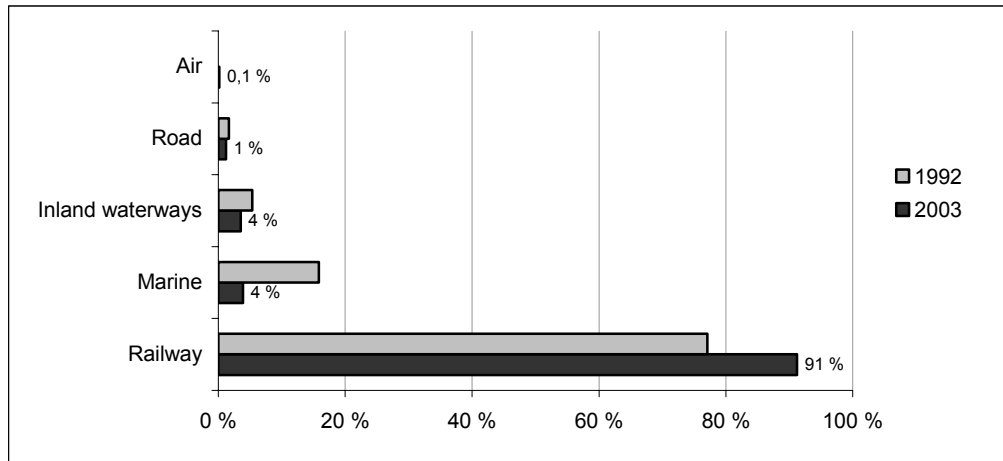


Figure 25. Structure of Russian Freight Turnover Volume by Transport Mode during 1992-2003 (share of total ton-kilometers, Goskomstat 2004a)

5.3.3. Global Importance

Being the world's largest country, Russia has an advantage in the transit traffic. It can offer long routes along which there are no border crossings or unnecessary stops. There are two transit routes which have worldwide importance: the Trans-Siberian Railroad connecting Europe and Asia-Pacific and the North-South route which connects Europe and Middle- and East-Asia. From these the Trans-Siberian Railroad is the most important one, replacing a longer sea route and having a strong role also in the domestic traffic. It is based on the railroad:

Berlin (Germany) – Warsaw(Poland) – Minsk (Belarus) – Smolensk – Moscow – Nizhni Novgorod/Kazan – Jekaterinburg – Tjumen/Kurgan – Omsk – Novosibirsk – Taiset – Ulan-Ude – Habarovsk – Vladivostok/Nahodka

The Trans-Siberian Railroad has strengths in speed, price and flexibility, but also weaknesses in different rail gauges, bottlenecks in some parts, and monopoly issues. (Hernesniemi et al. 2005, p. 145)

The North-South route consists of railroads, highways and inland waterways. One of its special characteristics is the long inland waterway along the Neva and Volga. However, this route is now developing only with associated governments' support to become an option for the sea route of the Mediterranean Sea and the Suez Canal. It crosses the Trans-Siberian route in Moscow (Hernesniemi et al 2005. p. 151):

Baltic Sea – St. Petersburg – Moscow – Volgograd – Astrakhan – Caspian Sea – Iran – Persian Gulf / India

Also the use of Russian airspace for air transports offers a quite safe and fast route for carriages between Asia and Europe. According to Boeing, about a fifth of the total amount of air cargo in the world is transported between Europe and Asia, and it is growing with a rate of seven percent per year (cited in MINTC 2005, p. 45). The relatively high growth will ensure that there will be a need for capacity growth in this route.

5.4. Elements of the Logistics Cluster in Russia

The transportation infrastructure in Russia has been inherited from the Soviet Union. In the 1970s and 1980s there were several large investment projects, which were cancelled in the 1990s. The projects have been restarted only now - there are also many new projects financed by the private sector. (Hernesniemi et al. 2005, p. 129) While the Russian economy grows, the demand for logistics and transportation will increase. There is a constant need of investments in the infrastructure of all transport modes. The current states of these modes are described in this chapter. The following four characteristics describe the Russian transport infrastructure well (Hernesniemi et al. 2005, p. 18):

1. Extreme unevenness and fragmentation of transport routes
2. Very long distances in freight transport
3. Distance and isolation from most of the world's main transport networks
4. Unfavorable conditions of transport routes

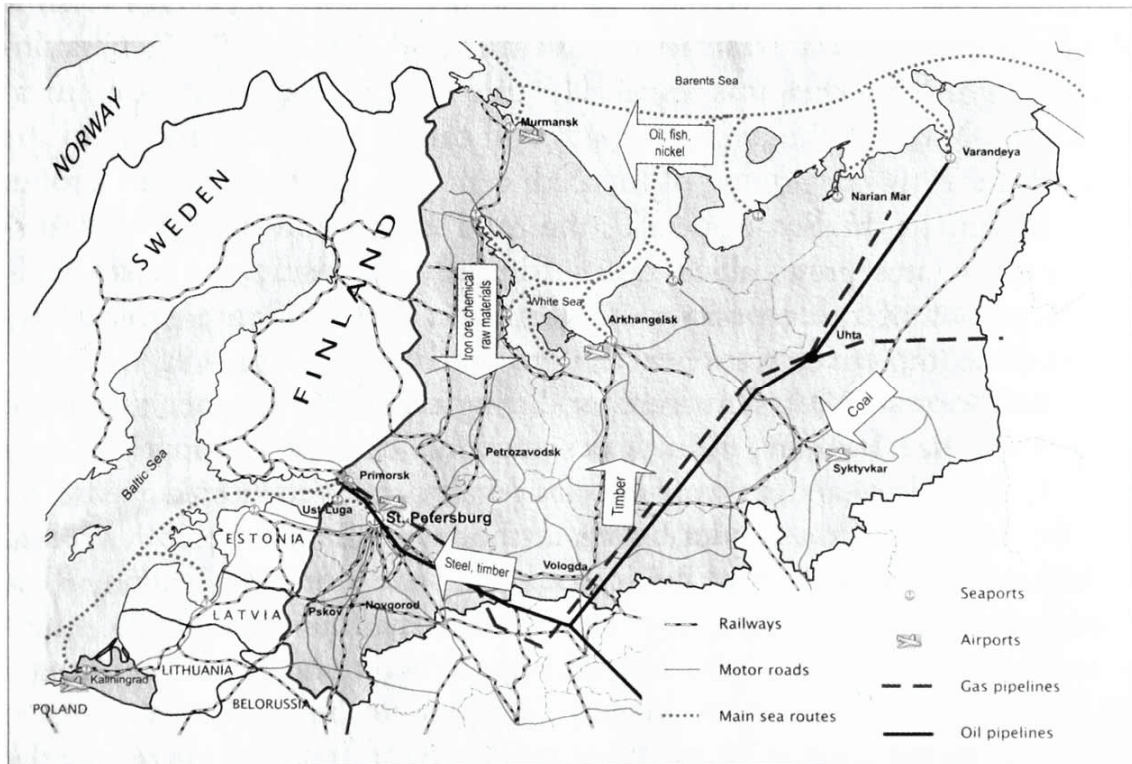


Figure 26. Transport Infrastructure in Northwest Russia (Dudarev et al. 2004, p. 144)

Though the aim of this study is to concentrate on Northwest Russia, the analysis of the separate transportation modes is mainly based on statistics and other sources covering the whole Russia. This is because information concerning Northwest Russia exclusively is quite hard to acquire.

5.4.1. Railroads

Handling nowadays the largest share of transportation in Russia, the railroads have long traditions mainly because of their capacity to carry large amounts of cargo through long routes with harsh weather conditions. There were 85,000 kilometers of railroads in Russia in 2003 – the amount has stayed quite the same from the 1970s, see Figure 26. Of these 85,000 kilometers, about 60 percent (50,000 km) is electrified and about half consist of at least two tracks. The density of the railroad network is 8.2 km per 1000 square km, of which 5.0 km is public. (Goskomstat 2004b)

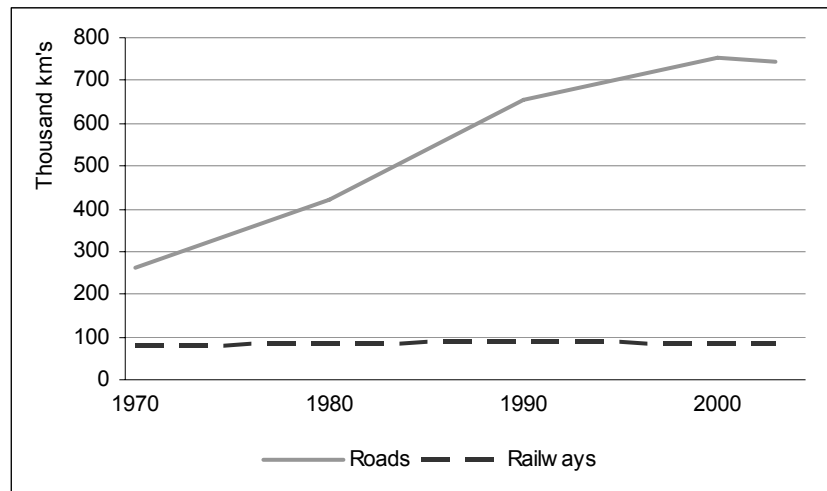


Figure 27. Comparison of the Total Lengths of Roads and Railroads between 1970 and 2003 (Goskomstat 2004b)

The size of railroad transportation in Russia is among the top of the world, it has the third largest network size after the USA and EU, and the second largest traffic density¹⁰ after China, though the traffic is nowadays only about 60 percent of its historical peak in 1988. On the other hand, the growth of railroad traffic has been steadily rising (see Figure 29) (The World Bank 2004a, p. 14; CIA 2005; Goskomstat 2004b) However, the weaknesses of the railroads must be dealt with; lack of investments being the most important one. Also the share of freight turnover in the European side of Russia differs from the whole Russia – it is estimated that trucks are quite competitive in European Russia with a share of 40 percent in ton-km due to the shorter connections.

The lack of investments is the largest problem in Russian railroads. Figure 28 shows that the locomotives, both electric and diesel, are getting older due to insufficient investments in railroad equipment. The share of new stock decreased to the level of one percent (less than 5-year old locomotives). The OAO Russian Railroads (Rossiyskyye zheleznyye dorogi, RZD) has said that it will need 7,500 electric and 8,000 diesel locomotives by the year 2010. The freight cars are not only in need of repair, but mainly suitable only for transporting bulk products. However, in the future the need for moving containers with flat cars will increase and thus the need of new freight cars is also massive, 17,000 annually. Altogether 2.4 billion dollars is needed yearly to cover these investments – RZD has planned to start the modernization program this year. (Gilligan 2004)

¹⁰ “Traffic density” is defined as (ton-km + passenger-km / line-km).

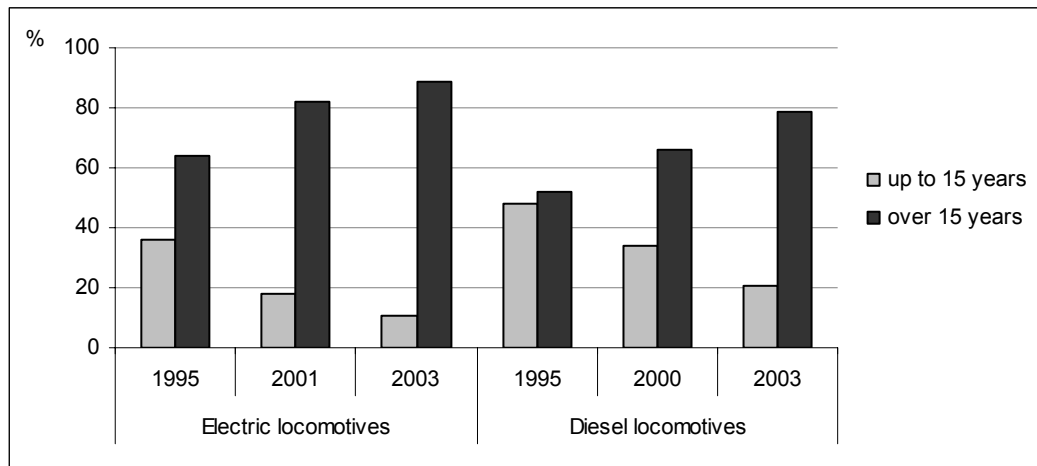


Figure 28. Breakdown of Railroad Locomotives by Age (Goskomstat 2004b, p. 55)

Until recently the railroads were operated in Russia by the railroad ministry. OAO Russian Railroads (Rossiyskyye železnye dorogi, RZD) spun off from the railroad ministry in 2003 but remained state owned. The state owns basically all the main tracks, stations, switch tracks, and similar equipment, as well as majority of the locomotives and rail cars. In Northwest Russia the railroads and their infrastructure is controlled by Oktyabskaya železnaya doroga – a department of RZD. (Hernesniemi et al. 2005, p. 123,133) In August 2004, the board of RZD approved a massive strategic development program, which includes spending 63 million dollars in investments. RZD has already negotiated about a loan of 300 million dollars with Citigroup and will receive it when some details are agreed on. (EIU 2004a) This kind of investment is essential for Russian Railroads, in order to be competitive in the future.

The growth of the traffic via railroads is accelerating. It can be seen that both growth rates – the growth of tonnage and the growth of distance in railroad traffic – increased during 2002-2003, see Figure 28. However, the current trend of increasing growth in freight turnover is mainly caused by the growth of average distances of shipments. According to the Fortune magazine, the Russian Railroads is the fourth largest enterprise by turnover in Russia (cited in Lukkari 2005).

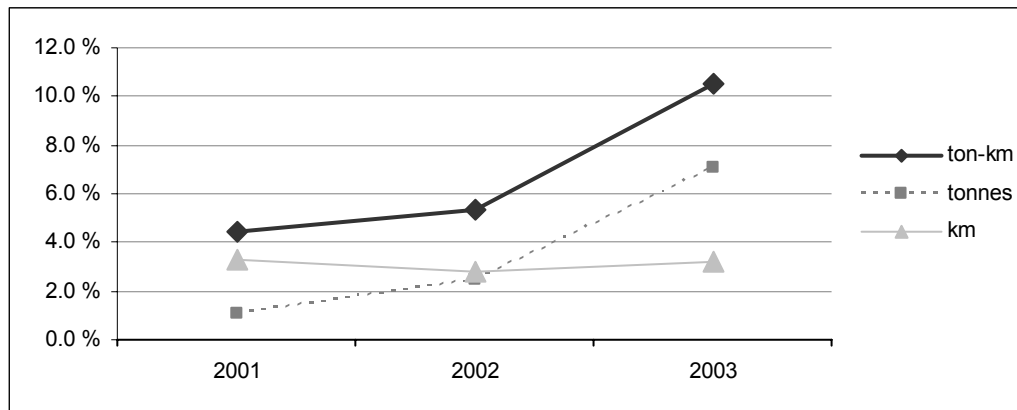


Figure 29. Development of Growth in Railroad Traffic in Russia by kilometers, tonnes and ton-km (Goskomstat 2004b)

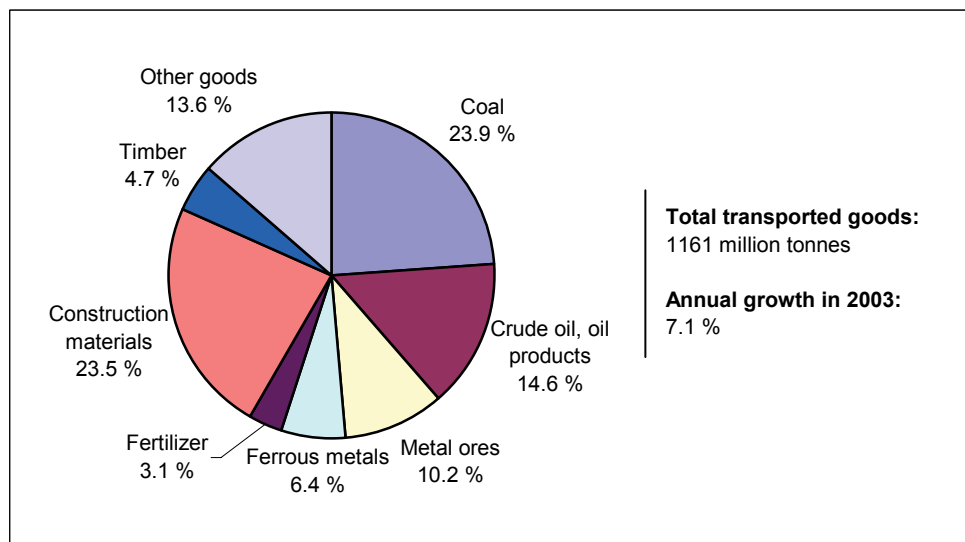


Figure 30. Structure of Transport of Goods by Railroads by Commodity in 2003 (Goskomstat 2004b)

Coal is the largest single commodity in railroad transportation. The order of the seven largest commodities in railroad transport has remained the same for the last ten years, being divided into three major commodities and four minor ones. Besides coal, construction materials and crude oil and oil products each have a share of about one fifth of the whole railroad transportation.

RZD is the largest player in the Russian railroad traffic – its market share in cargo is 80 percent and in passengers a full 100 percent. Besides, by owning the railroad infrastructure it has the ability to influence on other railroad companies. However, a company named Severstaltrans has been very interested in investing in railroad operations. Formerly a part of the steel company Severstal, Severstaltrans is now the most promising and developed transport operator in Russia. It has even

acquired its own railroad stock and plans to compete with RZD in the future. Another player in railroads is Eurosib, a company founded by two ex-managers of the Russian Railroads in 1992. Eurosib has a strong role in traffic between Finland and Russia, having a market share of 30 percent of all Russian railroad carriages to Finland. Like Severstaltrans, Eurosib has its own railroad stock of 3,000 cars but it also rents 9,000 cars from RZD. (Hernesniemi et al. 2005, p. 157-158)

5.4.2. Road Transportation

The road transportation in Russia is specialized on shorter distances. There are 745,000 kilometers of road with hard surface, of which 544,000 km is public. The length of the roads increased by almost 300 percent between 1970 and 2000, but has declined a bit in the last few years (see Figure 27, page 60). (Goskomstat 2004b)

The density of the road network in whole Russia is very low. Even though it increased by almost 40 percent between 1990 and 2003, the annual growth rate in the 21st century has been less than one percent (Goskomstat 2004b). However, the situation is somewhat better in Northwest Russia, as can be seen in Figure 31, though the density is highly uneven between different regions. Regions with high production share of natural resources, like Komi, Murmansk, Arkhangelsk, and Nenetsk, have the lowest densities of road network. If St. Petersburg is excluded, the road density is highest in Kaliningrad (about 38 km/100km²) and Leningrad (33 km/100km²). (Dudarev et al. 2004, p.145)

Russia needs a better road network cover in order to achieve the wanted economic growth, but that requires quite massive investments. The spare capacity of 1990s in road network has turned to overloaded roads especially in European Russia – roads that were designed to carry 5,000 vehicles per day have a daily traffic of 15,000 vehicles. The design standards for road building should also be updated. Many of the roads built in the soviet era have maximum axle loads of six or eight tons per axle, whereas the modern European trucks have axle loads of 11 to 16 tons per axle. This is one of the reasons why Russia should invest also in the existing road network. Furthermore, 32.7 percent of rural settlements and many centers lack paved road connections. (The World Bank 2004a, p. 9)

The future of road traffic depends largely on the manufacturing SME (small and medium sized enterprise) sector (The World Bank 2004a, p. 4). The government stimulates the growth of dynamic SMEs because of their capability to foster economic growth. On the other hand, SMEs often choose roads instead of railroads as their transportation mode, which means growing demand particularly over road transportation. The World Bank (2004a, p. 4) estimates that road transport could increase its market share in Russia by as much as 50 percent within the next 20 years; the growth would be the highest in European Russia and weakest in the vast agricultural areas of Central Asia and Siberia. Achieving this kind of growth requires investments in designing, building, and maintaining of road

network, developing of institutional structures in road transport, and reducing the high road accident rate, especially in fatalities.

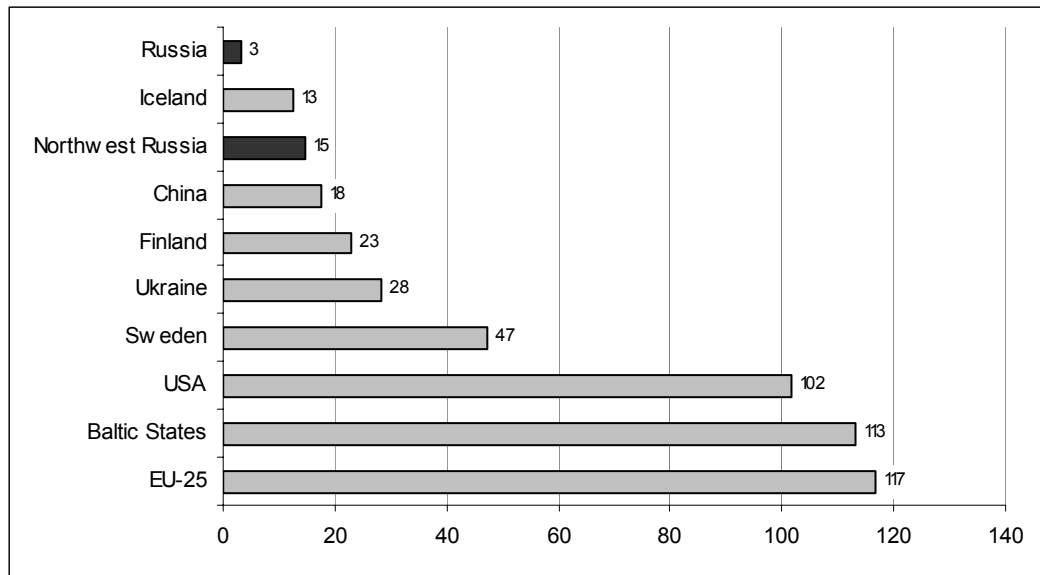


Figure 31. Density of Road Network in 2001, km/100km² (Statistics Finland 2004)

The largest problem in road transport is insufficient investments. According to the Ministry of Transport, over a half (53%) of the country's highway system needs repair. Despite the fact that more tax revenues were supposed to be earmarked to road infrastructure investments, the investments in the road sector have declined – for example the total highway funding decreased from 11.2 to 5.6 billion dollars in 2004. It is estimated that in order to maintain the existing state of the roads, the investments should be about 3 billion dollars, meaning 1 percent of the GDP – the investments required for roads to support the growth (about 5 percent a year) should be 1.25 percent of the GDP. These figures still exclude the construction and maintenance of previously deterred road. However, in 2002 the share of public road investments was only 0.3 percent of the GDP of Russia while in the EU countries the figure is close to 2 percent and in many middle-income countries up to 3 percent. (Gillian 2004; The World Bank 2004a, p. 4)

The World Bank offers five sources for funding the road sector and estimates their shares of the total revenues as follows: budget allocations (31 percent of total revenues), private investors (29%), fuel surcharges (17%), user charges like vehicle licenses (19%), and international financial institutions (4%). (The World Bank 2004a, p. 4)

However, the Russian government has taken actions in road infrastructure investment issues. In order to boost long-term economical development, clear bottlenecks and cut down road mortality rates, there is an ambitious proposal to invest one trillion dollars in upgrading the road network over the *Northwest Russian Transport Logistics Cluster: Finnish Perspective*

next 20 years (EIU 2004g). The government has also given a permission for the transport ministry to start building toll roads. The first high-speed toll highway will connect Moscow and St. Petersburg, and it will cost around 5.4 billion dollars with 15 year repayment (EIU 2005b).

Besides the aging of the road network, the aging of road vehicles is also a very typical problem. Though the share of quite new trucks, buses and public buses remained almost constant during 2000-2003, the share of older vehicles has been growing. The worst relative drop has been in public buses, whose share of older than 13-year-old vehicles grew by 80 percent from 15 percent in 2000 to 27 percent in 2003. In the same period the share of over 13-year-old trucks grew by 64 percent and the share of over 13-year-old private buses 57 percent – see Figure 32. (Goskomstat 2004b, p. 64)

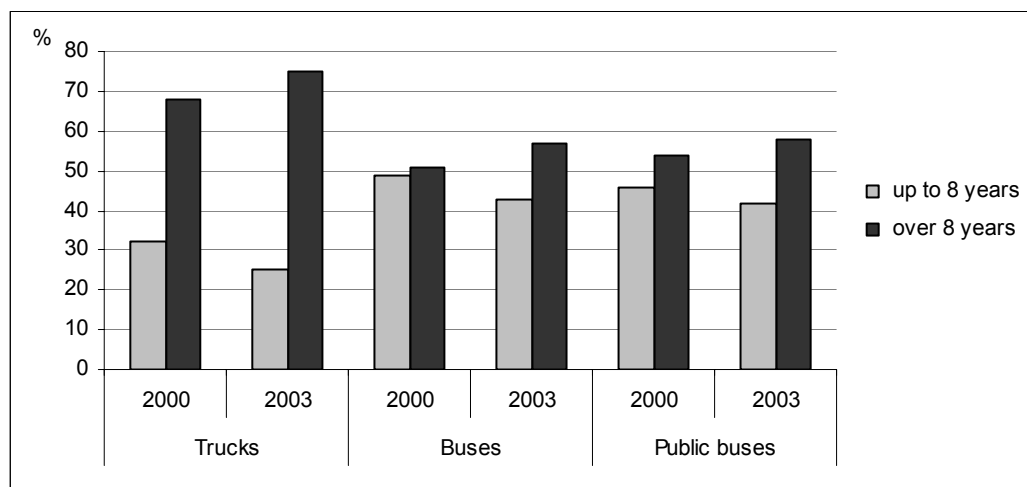


Figure 32. Breakdown of Road Vehicles by Age (Goskomstat 2004b, p. 64)

There was no growth in road transportation in 2001 and 2002 when measured in ton-kilometers. However, in 2003 there was a growth of 8.7 percent, which is supposed to continue. When examining the growth figures in Figure 33, it can be seen that the distances are getting longer but the amount of transferred cargo in tons is getting smaller. (Goskomstat 2004b; The World Bank 2004a, p. 4)

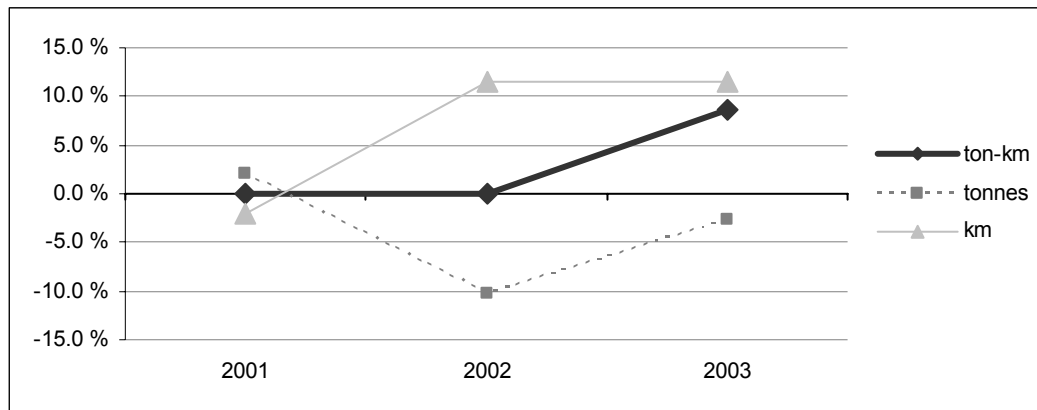


Figure 33. Development of Growth in Road Traffic in Russia by kilometers, tonnes and ton-km (Goskomstat 2004b)

Accidents are also a major problem in road transportation in Russia. Especially the rate of fatalities per 100,000 vehicles is exceptionally high, being 140 in 2003. For example the same figure in Finland was only 15, while in most European countries it varies from 10 to 40. (Statistics Finland 2004b)

The road infrastructure is owned by the state, and though there are several projects to build privately financed roads and bridges, those plans have not been realized yet. The road traffic is also the least transparent transport mode because of its taxation. Due to the fact that vehicles owned by juristic persons have higher taxes, companies cheat on taxation by renting vehicles from physical persons. Moreover companies easily report less transport than has actually happened. (Hernesniemi et al. 2005, p. 124)

There are only a few very large traffic contractors in Russian road traffic. Sovavto-Sankt-Petersburg is one of them, the largest one in Northwest Russia. Besides trucks, the company owns a service center, a motel and a customs terminal in St. Petersburg. However, the competition situation has tightened and as an ex-monopoly company, Sovavto has some problems. There are several foreign companies who have enough funding to gain market shares. Also small and mid-sized Russian enterprises have started to utilize the possibility to lease new trucks. Often with the help of some questionable solutions these companies provide competitively priced services. A third group which has a role in the traffic is the logistical departments of large enterprises. (Hernesniemi et al. 2005, p. 160)

5.4.3. Ports and Maritime Transportation

Northwest Russia faced a totally new situation when the Soviet Union collapsed in the beginning of the 1990s. Former Russian ports in the Baltic, such as Tallinn, Riga, Ventspils, Liepaja, and Klaipeda

were no more under Russian infrastructure but served the new Estonia, Latvia, and Lithuania. This caused a lot of pressure in the transportation system in Northwest Russia; it was the largest macro-region when measured by imports and exports with St. Petersburg as the main area of traffic, but lacked the capacity to fulfill its needs. (Dudarev et al. 2004, p.143) It is estimated that the capacity of the ports of the NWFD should be doubled or tripled to ensure bottlenecks (Dudarev et al. 2002, p. 149)

Table 22. Largest Ports in Russia by Volume (Hernesniemi et al. 2005, p. 138, Dudarev 2003, Tint 2003 & Vinkov 2002)

Port	Location	Transported Cargo	Volumes in (Mln.tons)		
			2003	2002	2001
Novorossiysk	Black Sea	Crude oil, oil products, metals, fertilizers, containers	N/A	56	57.1
St. Petersburg	Baltic Sea	Containers, oil products, forest products, metals, fertilizers	42	41.3	20.1
Ust-Luga	Baltic Sea	Coal, crude oil, oil products, metals (under construction)	estimated annual volume: 35		
Vostochnyi	Sea of Japan	Containers, timber, coal	N/A	18	N/A
Tuapse	Black Sea	Crude oil, coal, metals, other dry bulks	N/A	17	16
Primorsk	Baltic Sea	Crude oil	17.6	12.3	N/A
Naknodka	Sea of Japan	Crude oil, metals, timber	N/A	10	4 (*)
Kaliningrad	Baltic Sea	Containers, fish, crude oil and oil products, fertilizers	N/A	10	2.7
Murmansk	Barents Sea	Metals, coal, other dry bulks, fish, crude oil	N/A	9	9
Vladivostok	Sea of Japan	Metals, timber, coal, other dry bulks	N/A	5	N/A
Makhachkala	Caspian Sea	Crude oil, other dry bulks	N/A	4	3

*) estimated

Officially there are 43 sea ports in Russia, but the real amount is way over 300 – there are enormous differences between authorities and their statistics. (Vinkov 2002) According to Vinkov, this is a direct consequence of the near past of the ports; until recently the ports were mainly operated by criminal-related groups with shadowy export and import operations. The ten largest ones are listed in Table 22, the largest port being Novorossiysk. According to its website at <http://www.seasco.ru>, it concentrates on oil transportation at the Black Sea – 80 percent of its volume is crude oil. The list also includes Ust-Luga, a new port which will be completed in 2007.

Five of the ports are located in Northwest Russia; St. Petersburg, Primorsk, Kaliningrad, Murmansk, and Ust-Luga. Besides, near St. Petersburg there are ports located in Vyborg, Vysotsk, Kronshtadt,

Bronka, Lomonosov, and Batareinaya, see Figure 34. The ports have different deficiencies; bad ice conditions, draft restrictions, location problems, and insufficient funding for renewing the infrastructure.



Figure 34. Russian Ports near St. Petersburg (Hernesniemi et al. 2005, p. 140)

Kaliningrad and Murmansk are the only ports in Northwest Russia which are free of ice around the year. However, also Ust-Luga is said to be ice-free about 330 days annually. Draft restrictions concern Kaliningrad, St. Petersburg, and Primorsk – the only deep-water ports with a depth of more than 15m are Murmansk and Ust-Luga. For example the canal leading to the port of St. Petersburg is only 11 meters deep, thus restricting the use of the port to some extent. On the other hand there are plans to deepen the canal in St. Petersburg by the end of 2005, which would allow ships with a capacity of 70.000 tons – that alone would almost double the capacity limit from the present 40.000 ton per vessel. (Dudarev et al. 2002, p. 149; Gillian 2004; Skog 2004, p. 21)

The ports of Northwest Russia also suffer from poor facilities in the need of reconstruction and modernization. Quality and service in the specialized, e.g. oil or chemical terminals are below international standards. (Dudarev et al. 2002, p. 149)

The location of the ports near downtown areas can be a problem – the port of St. Petersburg is in the middle of the city. When the common traffic increases, the connections through cities will slow down. The other problem is that there is usually no space to expand the port infrastructure. These problems can be solved by moving the ports a bit further away from cities within good connections to main routes. (Gillian 2004; The World Bank 2004a, p. 4) For example Ust-Luga is a good example of

this kind of placing strategy. However, the long distances between the major markets and ports in Murmansk and Kaliningrad are a restrictive factor in the use of these ports.

One positive issue is that there is a major boom in investment and construction in Russia's southern and northwestern ports (Vinkov 2002). The investments are likely to continue, the largest one being Ust-Luga. Also Primorsk and St. Petersburg are receiving a positive flow of private funding.

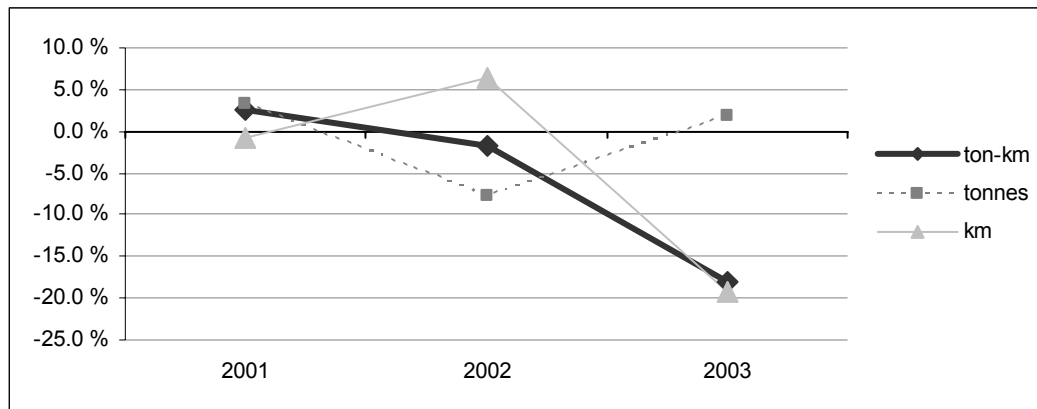


Figure 35. Development of Growth in Maritime and Inland Water Way Traffic in Russia by kilometers, tonnes and ton-km (Goskomstat 2004b)

The age of Russian ships started to grow again after the year 2000. Figure 36 shows that in 2003, over four fifths of the ships were older than 15 years and over one third were even older than 25 years (Goskomstat 2004b, p. 74). Russia should start renewing the vessels – but as ship orders of different countries are compared in Figure 37, it can be seen that Russia is not even near the top of the list. The share of Russia in all ship orders in 2002 was only 0.8 percent, behind for example Poland (1.1 %) and Ukraine (0.9%).

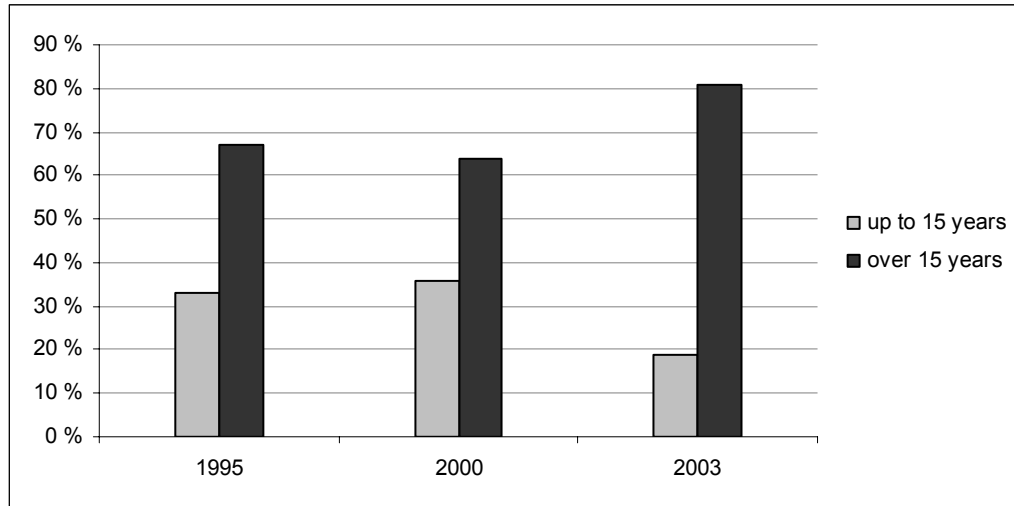


Figure 36. Breakdown of Public Maritime Transport Fleet by Age (Goskomstat 2004b)

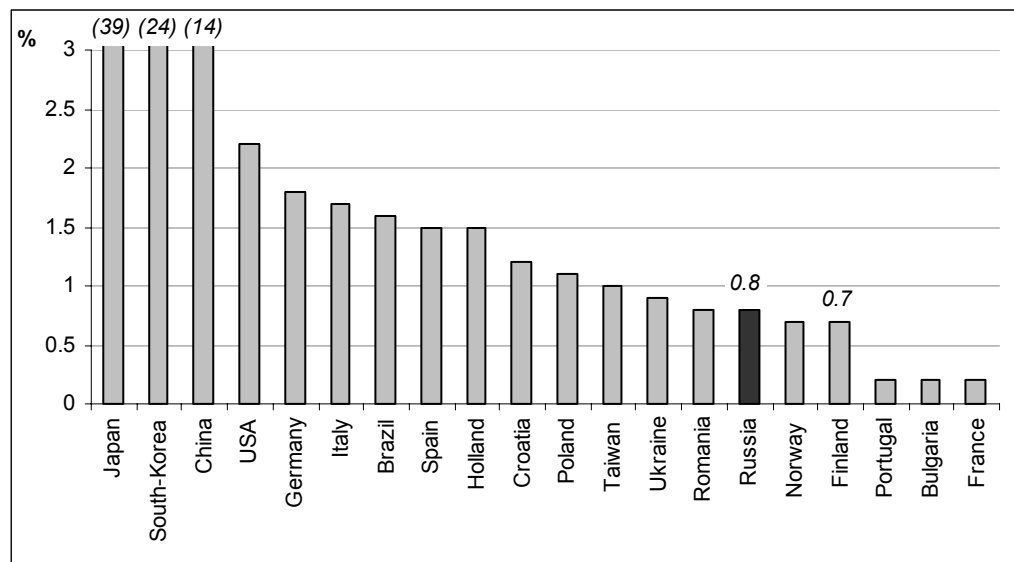


Figure 37. Shares of Different Countries of the Total Number of New Ship Orders by Compensated Gross Tonnage (AWES 2003 cited in Tekes 2004, p. 14)

The state owns the majority of the shares of sea ports and immovable property like docks, canals, and port operations. The largest long distance shipping company, also state owned Sovcomflot, is specialized in crude and oil products with 32 of its total 44 ships (EIU 2004e). Of port operators, the largest company in Northwest Russia is the privately owned Petrolesport. It operates mainly in the port of St. Petersburg owning two terminals, a container and a ro-ro terminal. Also the Finnish Containerships has moved into the Russian markets. It opened a new container terminal in the port of St. Petersburg in 2002 and plans to grow strongly. Besides railroad operations, Severstaltrans has also interests in port operations. It owns the largest container terminal in the port of St. Petersburg and has plans to establish new terminals and to acquire shares of sea ports. (Hernesniemi et al. 2005, p. 158-161)

The infrastructure of inland waterways is under state ownership, but riverboats are typically privately owned (Hernesniemi et al. 2005, p. 124) The leading river transportation company, Volgotanker, has a 70 % market share in river transports – the majority of the company is indirectly owned by Yukos, while 20 % is owned by the state (EIU 2004f). In Northwest Russia, the leading inland waterways operator is Northwest Shipowner, of which the state owns 25.5 percent (Hernesniemi et al. 2005, p. 162). Both these companies provide also other logistical services.

5.4.4. Aviation

Russian air transport industry suffers nowadays from poor and obsolescent infrastructure, and low purchasing power. Furthermore it lacks local investors. The industry has changed a lot since the breakup of the Soviet Union when the then monopoly enterprise in aviation, Aeroflot, was split into more than 300 independent operators, many of them strictly operated by the government. (Komarov 2001) According to Zavarsky (2004), the aviation industry in Russia is “virtually paralyzed”, focusing only on maintenance instead of research and development. The air transportation is still considered a technical fulfillment, not business.

A lot has happened in Russian civil aviation since the collapse of the Soviet Union. The number of airlines increased from one to 393 in 1994 but decreased to 210 in 2004, and the number of airports diminished from over 1300 to 421 between 1992 and 2003, while the number of international airports increased from 19 to 70 during the same period of time. (SSCA 2005) The current structure of civil aviation is presented in Figure 38.

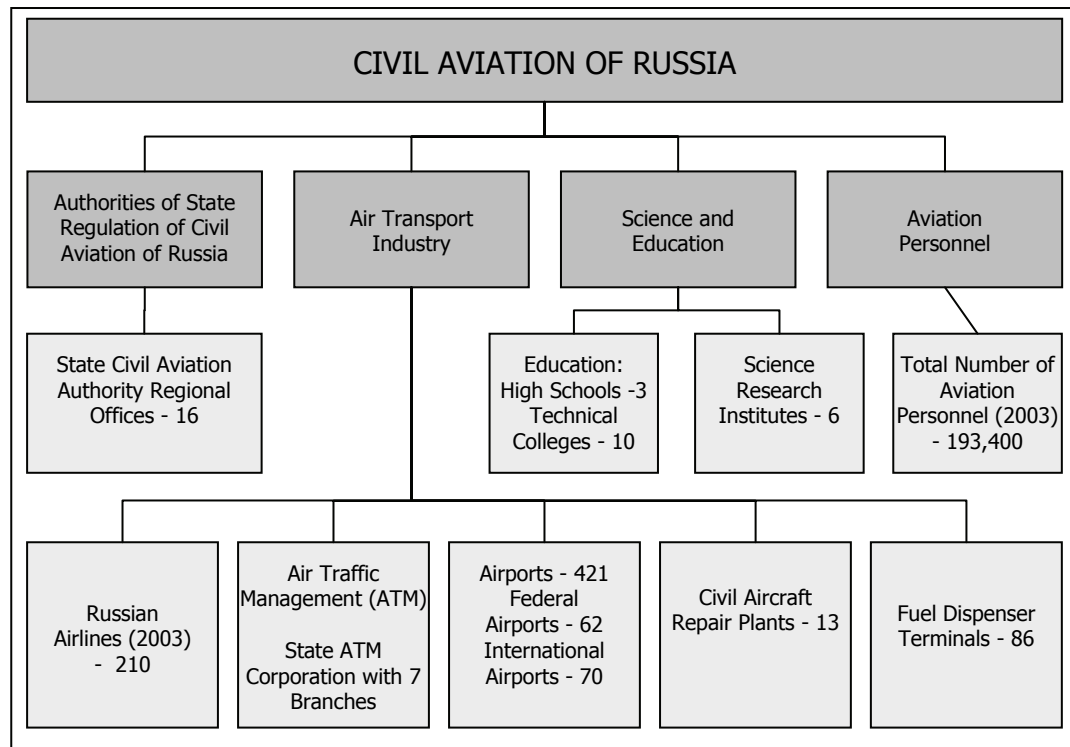


Figure 38. Structure of Civil Aviation in Russia (SSCA 2005, Goskomstat 2004b)

The number of cast-off civil aircrafts in Russia is increasing, and the rest are getting old. A large part of aircrafts are in need of modifications if the newer and tighter noise restrictions are to be followed – this concerns mainly international flights, however, while domestic flight regulations are looser in that matter. The number of aircrafts fell from 8,000 to 5,800 during 1995-2003. During the same period the share of newer aircraft, ones that have been operating at most five years, dropped from 8 percent to less than one percent – almost 70 percent of the aircrafts are older than 15 years old, see Figure 39. In 1995 there were 65 aircrafts built in Russia, but only 13 in 2003. (Goskomstat 2004b, p. 90) It is estimated that by 2005 around 2,000 civilian aircrafts need to be replaced – by 2007 the figure would be around 3,400 (Hammond 2003).

To update the fleets, massive investments have to be made by both air carries and the aircraft industry. The value of the import of aircrafts was about 360 million dollars in 2003 (Goskomstat 2004b). However, the government attempts to boost the domestic aircraft industry, by cutting down the use of foreign aircrafts by increasing duties etc. This might cause a problem because the level of technology in the Russian aircraft industry is quite obsolete for producing modern competitive aircrafts. One solution to the equipment problem is leasing. Foreign-owned companies are leasing new aircrafts and thus making the business of air traffic possible. (Hammond 2003; Zavarsky 2004)

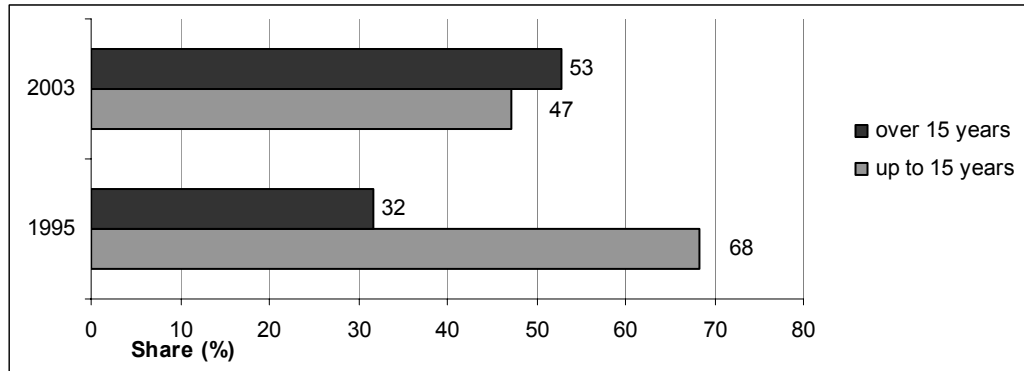


Figure 39. Aircraft Shares by Age of their Operational Use (Goskomstat 2004b, p.91)

Figure 40 shows that the distances are growing and the tonnage shrinking in air cargo transportation, meaning longer routes with lighter cargo. The amount of transported goods in tons decreased by about ten percent in 2003. Electronic equipment does not weigh much so that could be the reason for the weight trend. The longer distances might be caused by the Southeast Asia as a leading producer for electronic equipment such as computers, televisions etc. The overall growth in the form of ton-km slowed down to zero in 2002-2003 while being only a few percent in the early 2000s. Also the relation between international and domestic routes stayed quite the same during 2000-2003, being 67 percent in 2003 (see Figure 41). (Goskomstat 2004b)

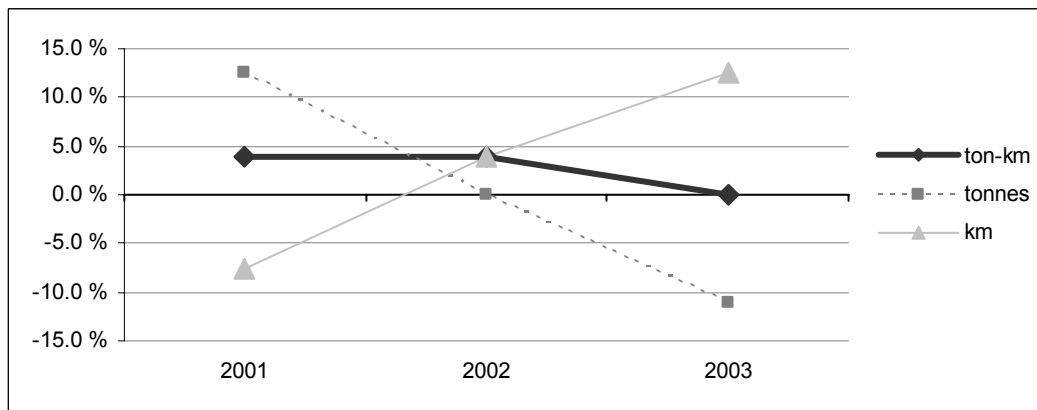


Figure 40. Development of Growth in Cargo Air Traffic in Russia by kilometers, tonnes and ton-km (Goskomstat 2004b)

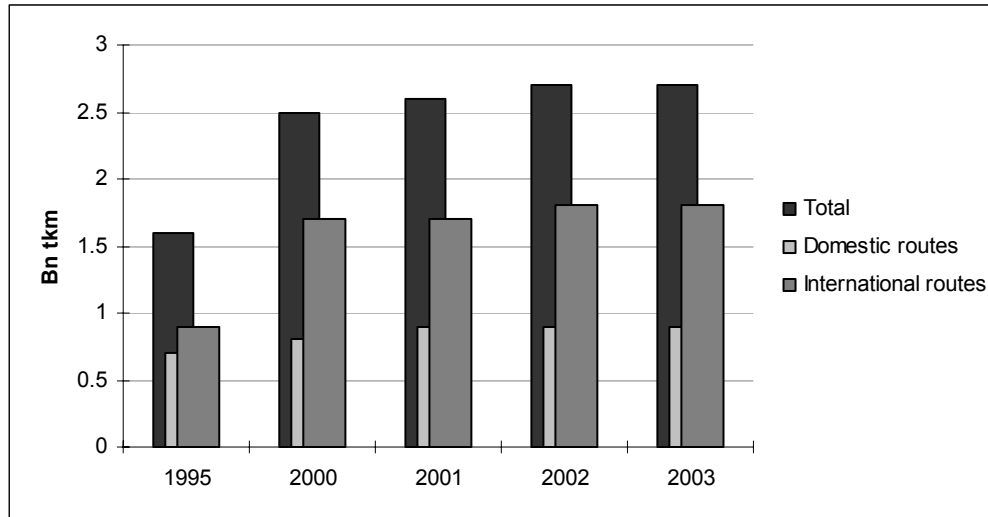


Figure 41. Freight Turnover in Air Traffic in Billion ton-km (Goskomstat 2004b, p.91)

Unlike cargo, the transportation of passengers especially in domestic routes suffered a lot in the late 1990s. In 1990 there was a total of 160bn passenger-km traveled (EIU ViewsWire 2003), while in 2000 the same figure was only 53bn (Goskomstat 2004b, see Figure 42). However, the transportation of passengers had somewhat steady growth during 2000-2003, while the total passenger-km rose to 72bn in 2003. According to Goskomstat (2004b), the structure of transportation of passengers has shifted after 1995. It has been mainly domestic, but was roughly equal between domestic and international routes in 2003.

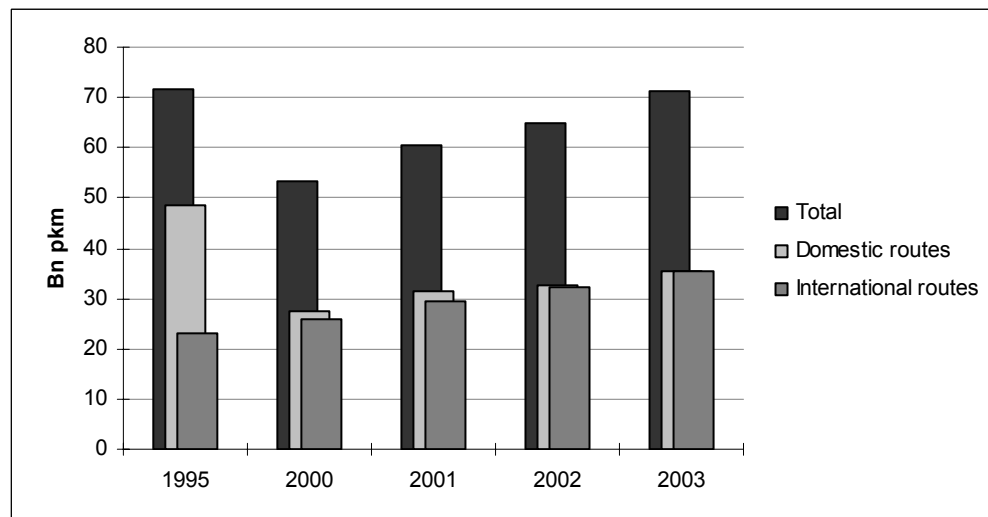


Figure 42. Passenger Turnover in Air Traffic in Billion pkm (Goskomstat 2004b, p.91)

The main reason for domestic transportation of passengers having had such a steep downhill is related to the prices. During the Soviet period, aviation transportation was considered to be a basic transportation method for common people and was thus directly subsidized. As a result, domestic

airline fares were even lower than railroad tickets and the volume grew faster than Russia's gross domestic product. (Komarov 2001) When these subsidies ended the prices went up and the flights were no more affordable to common people – the average ticket prices were around 3,600 rubles, whereas the average monthly salary was only around 3,000 rubles in the early 2000s (Zavarsky 2004).

The major Russian air carriers are listed in Table 23. Most of these companies have been established in the privatization process of Aeroflot. The majority of air transport is carried out by only a few airlines. Of the total of 264 airlines only about 30 accounted together for 90 percent of the total air traffic in 2001 (Zavarsky 2004). Furthermore, due to the harsh environment there have been many bankruptcies among these airlines; even some successful operators have ended up in troubles.

However, the largest operator is still Aeroflot, despite of its troubles and inherited bureaucratic character as a state owned enterprise. In the company's web site at www.aeroflot.com it can be seen that Aeroflot became a public company in 1995, but still remained in the control of the Russian Government, which owns 51 percent of it. In general, according to Goskomstat (2004b), the share of state and municipal ownership among all enterprises in air transport is 18 percent, while it is smaller in other transportation modes (see Table 27, page 85). The state also owns the airports and the infrastructure related to them.

Table 23. Key Players in Aviation Transportation in Russia (Company web sites; Air Cargo World 2005; Zavarsky 2004; Hernesniemi et al. 2005; Hammond 2003, p. 59)

Firm name	Location	Specialization	Owner	Personnel
Aeroflot	Moscow	Aeroflot handles 68% of all cargo & passenger traffic: Total '03 Cargo Tonnage: 119,000 tons; Total '04 Estimated Tonnage: 124,000 tons	State	15,000
Rossiia / Pulkovo	St. Petersburg	The largest Northwest Russian carrier and the second largest in Russia. Merged with Pulkovskije Avialinii in September 2004.	State	Pulkovo: 7000
East Line Group	Moscow	Leading cargo carrier in Russia with capabilities to transport a wide variety of shipments (e.g. perishable, hazardous, and radioactive). Also specialized in cargo clearance. Might be selling the airline in order to focus on the management of Domodedovo airport. (EIU 2004b)	Private	n/a
Domodedovo Airlines	Moscow	Among the largest Russian carriers, ex-Aeroflot regional division, domestic long-range passenger flights.	State	(400 flight crew members)
Volga-Dnepr Group	Moscow	A group that comprises 11 companies working directly in the air cargo business using its fleet or providing services in associated market segments. One of them, AirBridge Cargo (ABC), is specialized in international cargo flights from Asia to Europe via Moscow and perhaps to New York in the near future.	Private	1350
Krasnoyarsk Airlines (KrasAir)	Krasnoyarsk	Ex-Aeroflot regional division, cargo alongside with passengers.	State	4500
Transaero	Moscow	1st private airline (established in 1990) without Aeroflot background. Transports mail and cargo by all regular flights	Private	n/a

The competition in the Russian air transport markets is rapidly increasing. Aeroflot plans to double its cargo revenue within three years, mainly by focusing on routes between Europe and Southeast Asia and co-operation with DHL in the express delivery markets. Aeroflot has now about 20% market share in domestic air cargo but has only one percent of the air cargo between Europe and Southeast Asia. (EIU 2004c)

The major Russian airports in terms of passenger traffic are all located in Moscow – about half of all cargo and passenger traffic in Russia goes through Sheremetyevo (clearly the largest with forecast of about 16 million passengers in 2005), Vnukovo, and Domodedovo. These top three airports in Russia are followed by Pulkovo in St. Petersburg. For cargo traffic only there is Myachkovo in Moscow. All the airports have suffered from deficiency in infrastructure and many renovation plans have been made, of which some have also been executed. (Goskomstat 1999, cited in Hernesniemi et al. 2005, p. 142; Hammond 2003, p.58).

5.4.5. Strengths and Weaknesses of Transportation Modes

Strengths	Weaknesses
Railroad traffic	
<ol style="list-style-type: none"> 1. Largest transportation mode 2. Most extensive network in Russia including the Trans-Siberian Railroad 3. Relatively quick for large carriages 4. Long traditions 	<ol style="list-style-type: none"> 1. Lack of investments <ol style="list-style-type: none"> a. Aging infrastructure b. Aging locomotives etc. 2. Infrastructure is based on bulk product transportation 3. Problems in border crossing 4. Congestions in key traffic nodes 5. State owned
Road traffic	
<ol style="list-style-type: none"> 1. Quick in short routes 2. Flexible 3. SMEs prefer road transportation 	<ol style="list-style-type: none"> 1. Lack of investments <ol style="list-style-type: none"> a. Aging road network b. Aging road vehicles 2. Low density and coverage of road network 3. Congestions, e.g. in St. Petersburg 4. High accident rates 5. Least transparent transportation mode
Sea and inland traffic	
<ol style="list-style-type: none"> 1. Many ports in several seas 2. Long inland water way routes 3. Governmental patriotic policy 	<ol style="list-style-type: none"> 1. Lack of investments <ol style="list-style-type: none"> a. Infrastructure in ports b. Aging vessels 2. Ports <ol style="list-style-type: none"> a. Ice problems b. Location problems c. Draft restrictions
Air traffic	
<ol style="list-style-type: none"> 1. Several air carriers 2. Several airports 3. Traditions in air transportation 	<ol style="list-style-type: none"> 1. Lack of investments <ol style="list-style-type: none"> a. Aging airports, also international ones b. Aging planes 2. New noise etc. restrictions in Europe 3. Lack of income

5.5. Factors of Competitiveness

The following chapters describe the state of different factors included in the adjusted Diamond model (see Figure 18, in page 47) that determine the Russian logistics sector.

5.5.1. Key Industry Trends

The rapid economic development of Russia causes challenges for the transportation and logistics. There is an increasing demand of high quality commodities from Russian consumers, but the infrastructure does not allow it to be completely fulfilled. For example there are not only too few

warehouses, but the existent ones are usually insufficiently guarded, with insufficient capabilities for example to preserve frozen goods (Spiridovitch 2005a).

Table 24. Key Industry Trends (Competitiveness.ru 2004b)

Trend	Characteristics
Logistics	<ul style="list-style-type: none"> • Growing competition in the privately dominated segments • Growing international competition among ports in the Gulf of Finland • Improvement in quality issues • Low level of transparency continues especially in maritime transport • Water transports begin to grow • Increasing transit traffic due to integration in the world markets
Governmental	<ul style="list-style-type: none"> • From direct to indirect control • Implementation of transportation strategy
Economical growth	<ul style="list-style-type: none"> • Increasing foreign trade causes growth in traffic • Foreign investments to Russian logistics

Russia has not been able to benefit fully from its geographical position and wide territory - the transit traffic between Asia and Europe could be better utilized. The use of sea routes could be replaced by transporting goods e.g. via the Trans-Siberian Railroad – and thus save time between two to three weeks per one carriage. (Laukkanen 2004) However, according to Boris Lukhov, who is the first deputy general secretary of the International Coordinating Council on Trans-Siberian Transportation, the TSR-route carried about 70,000 TEUs in 2004, while the designed capacity of TSR is 140,000 TEUs. This shortfall was mainly claimed to be caused by restrictions on the availability of flatcars to haul containers. Also the general opinion of Russia not being the safest partner has restricted some of the transit traffic. (Cited in Gillian 2004) There is also, especially in Japan, lack of confidence towards the Russian way of doing business, mainly caused by the changing bureaucratic environment. (MINTC 2005b, p. 48)

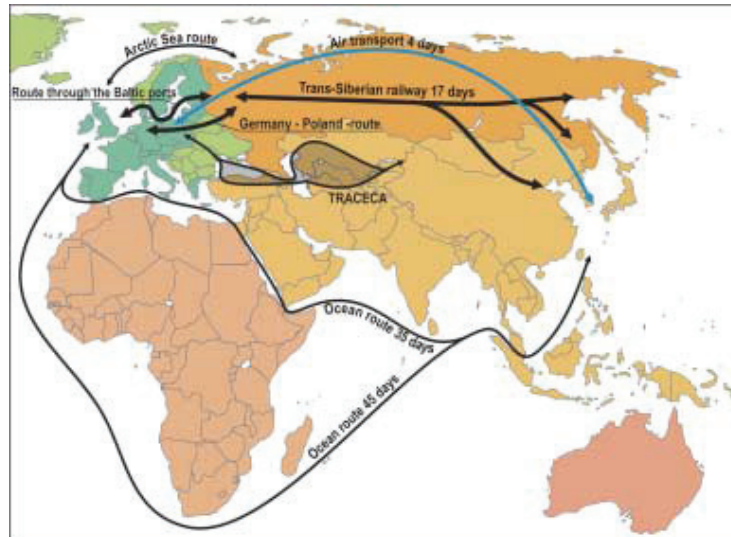


Figure 43. Different Transportation Routes between Asia and Europe (MINTC 2005b)

5.5.2. Factor Conditions

As mentioned in the previous chapter, aging is a quite large problem in the transportation infrastructure in Russia – the need of investments is continuous. The depreciation level is high in all transport modes (see Table 25).

Table 25. Depreciation of Fixed Capital during 2003-2004 (Goskomstat 2004b)

Mode	2003	2004
Total Transport	57.0 %	21.0 % ¹¹
Railroad	59.8 %	8.3 % ¹¹
Road	48.7 %	46.9 %
Maritime	45.3 %	43.4 %
Inland waterways	59.2 %	57.7 %
Air	55.9 %	53.3 %

Transport modes can be divided into two categories according to the quantity of investments: trunk pipeline, railroads, and road infrastructure received together 79 percent of all transport investments in 2003 and can thus be called major investments, while the others can be called low investments. This low investment group includes the metro, air, road, maritime, and inland waterways, trolleybuses, and

¹¹ Most of the fixed assets of the Railway Ministry were assigned to the open joint-stock company "Russian Railways", which caused the massive decrease in depreciation.

tramways (see Figure 44). However, renewing or building new transport capacities in Russia is uncertain. Railroads are a good example: in 2001 and 2002 about 190 km of new or second track railroad line was built and 660 km of railroad line was electrified – but in 2003 these figures dropped to about half, being 80 and 350 km, respectively.

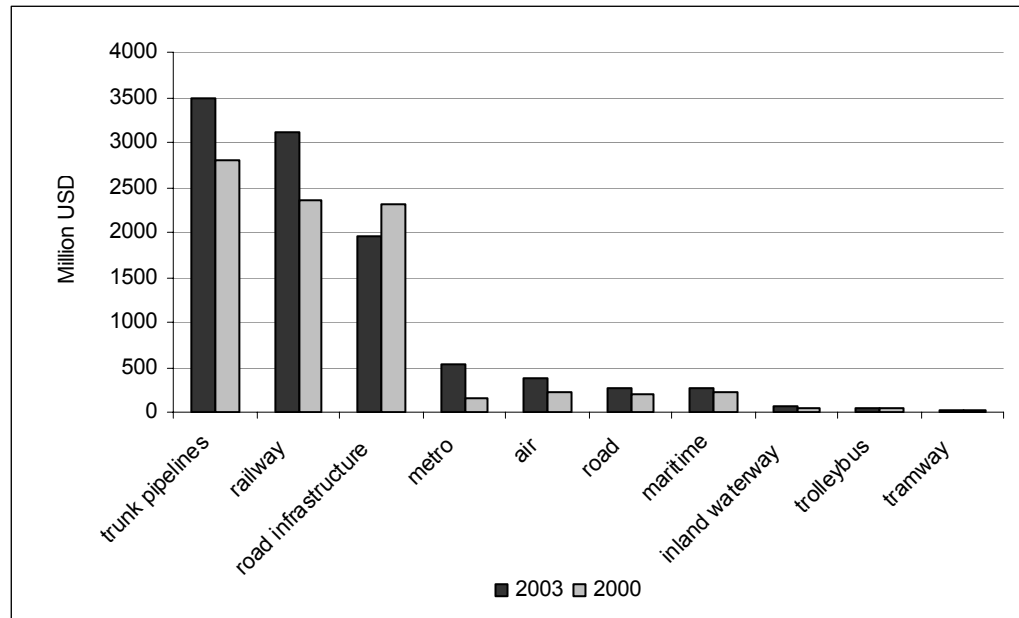


Figure 44. Investments in Fixed Capital by Modes of Transport (in actual prices, Goskomstat 2004b, p. 28)

The total amount of investments made to transport in 2003 was 10.8 billion dollars. Both trunk pipelines and railroads have grown by about 30 percent from the beginning of the current decade. The road infrastructure, the third largest investment target, has been the only one to decline among the transport modes; it has lost about 16 percent of its annual investments. Investments on the metro had the largest relative growth between 2000 and 2003; however the total investments on metro are about seven times smaller than in trunk pipelines. (Goskomstat 2004b, p. 28)

One area of shortage is warehouse space – in Moscow the shortfall of high class storage space is 400,000-500,000 sq meters, while in the whole Russia the shortage is 2.5-3 million sq meters. For example, on a per capita basis, in Prague there is six times and in Budapest four times more warehouse space than in Moscow. Because of this deficit, the prices are high, making Moscow the second most expensive place in Europe after London. In St. Petersburg, the prices have been even higher than in Moscow. To solve this situation new warehouses are a necessity. However, establishing new warehouses takes patience in Russia; only 60 % of total planned warehouse space was completed in 2004. The main causes for this are legal and operational obstacles – most of the space has to be reclassified from agricultural to industrial land and the appropriate infrastructure has

to be built to “potato fields”. That process takes time and money and thus terminates many projects. (Gill 2004; Spiridovitch 2005a)

In 2004, the Russian transport sector received about 660 million dollars of the total foreign investments (including FDI and different financing investments) of 40.5 billion dollars. Russia’s own investments on transportation were about twenty times higher. The total foreign investments into Russia grew by over one third (36.4 %) from 2003 and was about four times the size of foreign investments in 2000. A majority of the investments are either returning Russian capital or investments targeting to the growing Russian home markets. These investments will change the structure of the exports from final products to semi-manufactured products and raw materials. (Goskomstat 2005, Hernesniemi et al. 2005, p. 105)

According to WIIW (2005), Russia was a net investor in FDI (Foreign Direct Investments), while the Baltic States received a positive flow of FDI (see Table 26). When Lithuania and Russia are compared, the difference is quite remarkable. However, the WIIW figures are estimates – Goskomstat stated that the actual inflow of FDI to Russia was 9,420 million dollars, which exceeds the outflow estimate of WIIW by 782 million dollars, while the difference in FDI outflow figures is 1,100 million dollars. Of the listed countries, the FDI inflow is proportionally the lowest in Russia and the highest in Estonia, when FDI’s share of the GDP or FDI per capita are calculated.

Table 26. FDI in 2004 – Russia and the Baltic States (WIIW 2005, Goskomstat 2005, PBN 2005)

FDI type	Russia	Estonia	Latvia	Lithuania
Inflow, (USD million)	6,581 / 9,420 ¹²	885	658	1,008
Outflow	8,692 / 7,800 ¹²	361	106	78
Balance	-2,111 / 1620	524	553	930
FDI inflow per capita (USD)	46 / 66	656	285	293

In the Soviet period the educational system was top of the class. During the 1960s and 1970s the Soviet was estimated by the U.N. to be among the top ten countries, ranked by quality of education. However, the characteristics of socialism caused problems after graduation – centralized control and

¹² The latter figures are from Goskomstat (the outflow figure is cited in PBN 2005), while the other figures are WIIW estimates.

lack of incentives led to unmotivated employees who did not care about the results of their work. Also managerial skills were not taught well enough. The situation in education went even worse in the past decade, when the government decreased the support to the educational system, causing the level of education to decrease as well. (Dudarev et al. 2004, p. 149)

A new trend has been the founding of private educational institutes, but they are considered to have a lower quality of education as a rule. The public institutions have increased the number of specializations and thus managed to allure more students. The ties between educational institutions and companies have got worse, mainly because active property redistribution. This has caused problems with students who have lost the possibility to get familiar with modern technology and equipment. Overall, Russia has descended from the top to middle cast in the U.N. quality of education ratings. The most educated people are located in St. Petersburg, the university capital of Russia, but also in other major industrial cities (e.g. Cherepovets, Arkhangelsk, and Novgorod). While the most educated people from other areas in the NWFD are moving to St. Petersburg for better income, a flow from St. Petersburg to Moscow is also evident. (Dudarev et al. 2004, p. 150)

The development of transport-related education in 1995-2002 was two-fold: the amount of higher education has about doubled, whereas the training of workers has somewhat decreased (see Figure 45). Thus the education seems to be on the right path –higher level of know-how is needed when the transport operations are becoming more complicated.

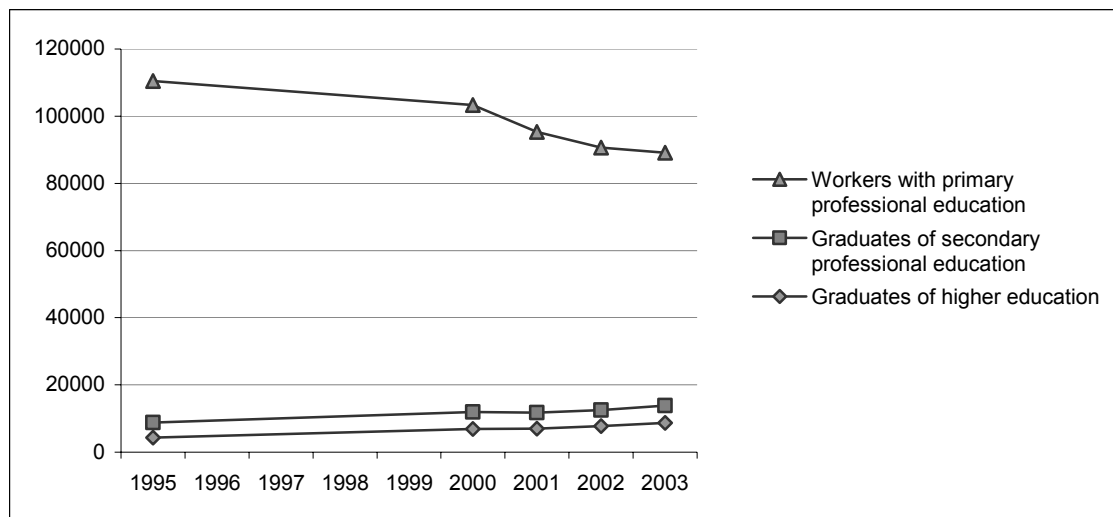


Figure 45. Development of Education Regarding Transport Operations in Russia, graduates per year (persons) (Goskomstat 2004b)

5.5.3. Demand Conditions

Northwest Russia is the only macro region in Russia with a border with five EU countries. Thus its location accelerates the logistical development of the region. The availability of raw materials in Russia is quite good. Russia has a wide coverage of natural resources containing oil, natural gas, coal, strategic minerals including different metals and diamonds, and timber. (CIA 2005, Finpro 2005a) In logistics, this means that bulk-related transports will continue and become more complex, when some resources – for instance oil – will become scarce and thus have to be acquired from places difficult to approach.

The general need for logistics will increase also along with the general development of the Russian economy. Moving from raw materials and bulk products to more complex ones and cutting the manufacturing costs create a need for efficient logistical services. Transportation is focused on the surroundings of industrial agglomerations – in other words near the need for transportation functions. Figure 46 presents the main industrial agglomerations in Northwest Russia. The expanding or potentially expanding agglomerations are located in the southern parts of the NWFD, Usinks being an exception. These six agglomerations have better business opportunities for logistics and logistical operations, while the geographical wideness and sparsely inhabitant character of the NWFD sets a challenge for the logistical services to operate between these agglomerations.

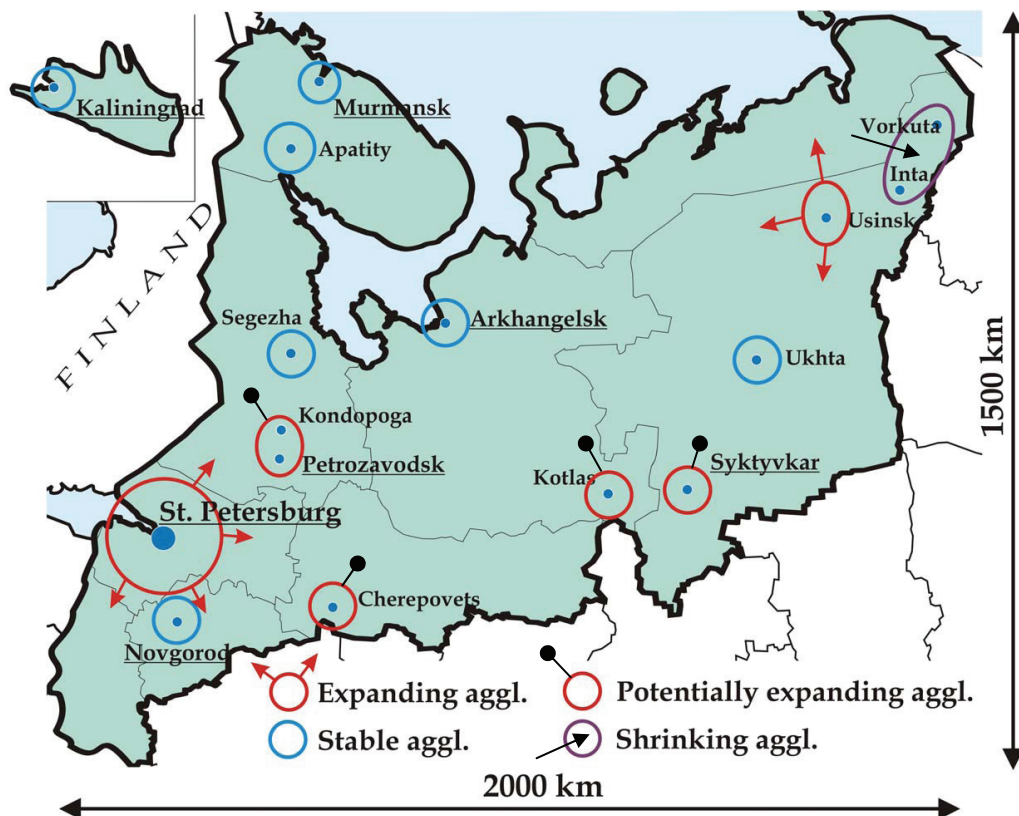


Figure 46. Industrial Agglomerations in Northwest Russia (Dudarev 2003)
Northern Dimension Research Centre – Olli Pekkarinen

5.5.4. Firm Strategy, Structure and Rivalry

The inherited politically directed business from the Soviet period is still a large burden for present companies, especially for larger ones (Dudarev et al. 2004, p. 165). When the different factors of production were fully controlled and the relationships between suppliers and customers were given from Moscow, single companies did not have to concentrate on strategy, structure or rivalry. Politics-based decision making does not have anything in common with the market economy.

After the Soviet period the structure of firms was widely re-organized. At present, there are five general types of transportation companies in Russia (Boltramovich et al. 2005):

1. Government-owned companies, a majority of which will be privatized in the future
2. Former subdivisions of large industrial companies (e.g. Severstaltrans, chapter 5.4.1)
3. Privatized firms, ex government-owned
4. Totally new Russian companies emerged in the past 15 years, usually SMEs
5. International companies, e.g. large logistics chains (Schenker, Danzas, etc.)

The transformation from a socialistic system to market economy has caused problems also in the business know-how of leaders. The methods taught in economical schools in the Soviet period were mostly ideological, not “hard science” (Tiusanen 2005). Also, because of governmental guidance, there was a total lack of competition. Thus the present leaders, often selected by their political position and relationships, face a hard time when operating in the free markets. The management usually lacks the basic knowledge in strategy planning, marketing issues, financial issues, and working in a competitive environment. It is common that the organizational structures are heavy because of a strict hierarchy. Also the number of inherited employees is usually excessive, making the labor efficiency low. (Dudarev et al. 2004, p. 166)

There is a lot to do to make the Russian firms genuinely competitive. Strategies have to be planned, the management has to be optimized, the employees have to be trained, the infrastructure and equipment have to be updated, etc. The author thinks that if a Finnish manager can double the output of a Russian production plant in just one day with simple re-organizing (Pätäri 2005), it is obvious that the Russian companies are not run in an optimal manner.

5.5.5. Related and Supporting Industries

Logistics operations have a major influence on all the manufacturing industries – and vice versa. However, the manufacturing of transport equipment, energy and ICT sectors can be considered as the most important industries in the development of logistics in Russia. The Russian domestic manufacturing of transport vehicles has strong ties with the military, for example in the aviation the

strongest products are military aircrafts. In markets as wide as Russia, efficient domestic production of transport equipment would increase the competitiveness of the whole cluster.

The role of the energy sector is two-fold. The trade of energy-related products is large, though it concentrates on the pipelines. Moreover, transportation consumes a great deal of energy in the form of fuel and electricity. Having domestic energy sources should generate synergies, if the relationships are well organized and managed.

The growing ICT sector has made applications enhancing the productiveness of transports. It is said that the Russian logistics needs the implementation of informatics systems in the operations (Dudarev et al. 2004, p. 181). Systems that would allow controlling the cargo flows more automatically by the clients are already in use in the developed countries, and thus the global companies are used to the efficiency they provide.

5.5.6. Role of Government

The logistics cluster has been strictly controlled by the Russian Government – it plays a major role in the development and operation of the transportation, controlling the entire basic infrastructure as well as many transport terminals. It also owns shares in many large logistics-related companies and sets the tariffs for railroad and pipeline transportation (see Table 27 for the ownership structure of transportation infrastructure in Russia). The role of government has changed a lot in recent years; the present division of responsibilities can be seen in

Figure 47. (Boltramovich et al. 2005, Hernesniemi et al. 2005)

Table 27. Structure of Ownerships in Transportation in Russia, 2003 (Goskomstat 2004b)

Transportation mode	State or municipal	Private or mixed ownership
Air	18	82
Railroads	14.5	85.5
Road	12.8	87.2
Maritime	10.9	89.1
Inland waterways	4.2	95.8

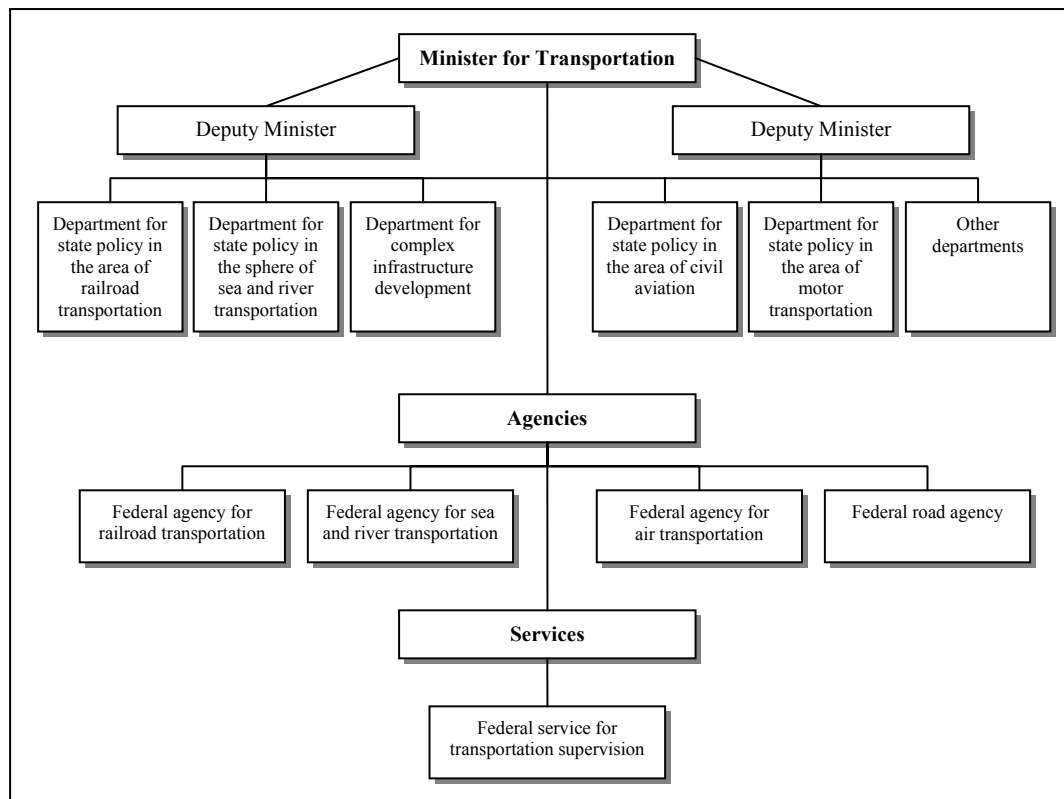


Figure 47. Government Regulation Scheme (Boltramovich et al. 2005, p. 38)

Passenger transportation is more regulated than goods transportation. The government wants to preserve lower prices in public transportation, since the majority of the population cannot afford private cars yet (Boltramovich 2005, p. 39). In the transportation of goods the Russian government has a regulatory role. The more important the role of a transport connection is to the Russian economy, the more it is controlled by the ministries. The reasons for this are the fear of growth in price levels and national safety issues based on the functionality of the military forces. Though there are local authorities, all the main problems and issues are solved concentratedly in Moscow. However, the state wants to minimize its direct participation in transportation and move on to indirect regulation. This is a part of the Russian transportation strategy. Hernesniemi et al. say that this conflicts with the reality, where the role of government is tightening and monopolies gaining strength. (Hernesniemi et al. 2005, p. 126)

The Russian government admits the deficiency of the Russian transport system. The good news is that there are plans on how to make the Russian transportation system more competitive – the government has released *The transportation strategy of Russian Federation* (Ministry of Transport 2004). The plan or roadmap raises questions about the role of government in the development of Russian transportation. The topics covered in the strategy include governmental regulation issues, as

well as development issues of different transport modes and the transport infrastructure. However, the nature of the strategy is quite protectionist; for example Russia wants to increase the use of their ports by setting unequal tariffs. The aim is that by the year 2010, ninety percent of the cargo coming from Russia has to be shipped via Russian ports (Kilpeläinen 2005).

In the transportation strategy of the Russian federation it is stated that the current situation in the transport system cannot be considered as an optimal one and the state of its development is not adequate. The ministry also says that one reason for the uneven economical development of Russian macro-regions is the scattered transportation system with many places left outside of it. (Ministry of Transport 2004, p. 2) The strategy contains wider development issues as well as specifically defined topics. The following main issues are covered in the strategy:

- Development guidelines for transportation networks
- Priorities for all transport modes and directions for implementing those priorities
- Acts as a basis for all transport-related decision making in order to ensure that all the transportation branches are developed efficiently

The development issues for each transportation mode covered in this study are listed in the appendix 5. The author sees that the government has recognized the most important deficiencies in the transportation and is trying to solve these problems. However, without enough capital to carry out the investments, the situation will not change as much as planned. The need of capital from various sources is massive, it is estimated that the annual sum till 2010 would be about 20 billion dollars (Ministry of Transport 2004, p. 52).

One of the recent large scale programs launched by the Russian government is the Megaproject Program, which is a collection of R&D megaprojects (total number of 12). These 12 megaprojects deal with seven different technological topics, of which one is “New transportation technologies”. The implementation of the program started in 2002 and it will be finished in 2006, when each megaproject should involve an entire cycle of innovation. (Boltramovich et al. 2004, p. 23)

5.5.7. Role of the EU and the WTO

The legal basis for the relationships between Russia and the EU was formed in 1994, when the Partnership and Cooperation Agreement (PCA) was signed. The agreement came into force in 1997, covering four main issues: trade and economic cooperation, general co-operation e.g. in science and technology, political dialogue, and justice and home affairs. However, the importance of the PCA has not been as strong as it could have been, but due to some additional agreements and concessions, the

situation has become better in the last few years. (DGER 2005; Hernesniemi et al. 2005; MINTC 2005b)

The focal issues in the logistical relationships between Russia and the EU can be listed as follows (MINTC 2005b):

- Different historical backgrounds, which causes differences also in the present politics. Russia has been inactive in developing the relationship and let the EU be the initiator; also the Russian protectionism causes problems in negotiations.
- The importance of the EU to Russia has increased – Russia wants to be a part of the transport networks in Europe, but the strict EU regulations are a problem for Russia and its companies.
- Russia is planning large scale investments to the development of its central transportation networks, which have a great importance also for the EU.

Another issue affecting the future of foreign trade in Russia strongly is its possible membership in the World Trade Organization (WTO). At present Russia is the world's largest trading country without a membership in the WTO – the membership would integrate Russia closer to the world economy. The EU has agreed to support Russia in the WTO issue (Hernesniemi et al. 2005, p. 95). According to Mäkinen (2005, p. 23) Russia's membership in the WTO is expected to come true in 2006.

5.5.8. Transition Issues

The Soviet Union left a lot of problems for the Russian federation. These problems included for example massive imbalances in production and unfinished infrastructure projects (Dudarev et al. 2004). The most direct influence on the transportation has been the unfinished rail, road, and port infrastructure projects. The chaotic trial and error method used widely in the transition process has eroded the competitiveness of the country. But Russia has not been able to get rid of governmental regulation.

Privatization is a topic which the Russian Government should consider especially in the railroad transportation, see Table 27. Many companies have been privatized after the Soviet Union collapsed, but usually the results have not been good (Dudarev et al. 2004, p. 168). Russia could learn how to carry the process through well from the privatization of the Estonian Railroads in 2001.

Table 28 describes the situation before and after privatization in Estonia.

Table 28. Statistics on Estonian Railroads before and after Privatization (Sinijärvi 2003)

Indicator	2000	2002	Change
Net sales (mln EUR)	100.8	111.9	11.0 %
Net profit (mln EUR)	2.4	13.4	458.3 %
Investments (mln EUR)	18.6	47.3	154.3 %
Employees	4498	3602	-19.9 %
Average monthly salary (EUR)	340	410	20.6 %
Freight carriage turnover (millions net t/km)	7719	9559	23.8 %
Domestic freight (mln t)	7.3	3.7	-49.3 %
International freight (mln t)	32.2	38.4	19.3 %
Average haul distance (km)	196	227	15.8 %
Locomotives	100	88	-12.0 %
Wagons	4154	3448	-17.0 %

The results are clear; profits have risen and expenses come down. The effectiveness can be seen from the net sales and net profit figures, and while the sales have grown by just over ten percent, the profits have increased dramatically, being over four and a half times bigger than before privatization. This has been achieved by reorganizing the organization; for example the management has been changed from political to business and the number of employees, locomotives, and wagons has been cut down. Other gained advantages are for example improved customer service, the use of segmentation, international operations, improved investment and financing capabilities, and higher safety. Also the relationship between unions and railroads has become more stable. (Sinijärvi 2003)

The privatization processes have not yet brought better productivity within larger companies – success has been a privilege of the internationally operated enterprises established in Russia. However, manufacture intensive small private Russian firms have managed to grow. (Dudarev et al. 2004, p. 150)

5.6. Competitiveness of the Russian Transport Logistics Cluster

This chapter presents my analysis of the current competitiveness of the Northwest Russian transportation logistics cluster. The author sees that the greatest problem in Russian transportation logistics is the lack of investments. Its share of investments from the GDP is significantly low, though the whole infrastructure of the country is falling apart. Moreover, Russia is financing the rest of the world because its CA has a high surplus when proportioned to its GDP. Also at present the

federal budgets usually show surplus. These three facts combined mean that Russia could quite easily increase its level of investments.

However, it is quite odd that the plans of renewing the infrastructure made by the Russian government are so ambitious – and unreal. For example the transportation strategy contains a great deal of extensive investment targets which would require a total sum of about 20 billion dollars per year till 2010. Though the investments have been somewhat growing and there seems to be surplus in the budgets, the capital needed in the planned investments exceeds the available funding capacity. The private sector is considered to have a decisive role in these investments, but is it really going to participate in the thought extent? The private sector has also other major investment targets: besides the infrastructure, the transportation equipment in all the traffic modes is in desperate need of updates.

However, the government could try to allure more foreign (direct) investments in Russian transport logistics. That way also the international business activity could increase when direct connections to foreign countries' logistics markets would open. At this moment there is only little international business activity in Russian logistics, mainly located in the CIS countries.

The second problem is the inherited “business model” from the Soviet period, which acts as a structural burden for the companies in the cluster. The lack of business know-how is imminent, but seems to be easing when the number of new graduates increases. However, the root of the problem might be so deep in the organizations that foreign help would be desirable.

The transition period of Russia affects in the background almost every aspect in the development of Russia. The most visible issue is the privatization processes. As seen in the example of the Estonian Railroads, privatization can have a dramatic effect on the competitiveness of a company. During the transition period many privatization processes were executed in Russia, but the results were quite weak.

Also interaction between companies is developing only now. In the Soviet period the business was centrally planned and the connections and partnerships were given by the central administration. However, the strong ICT sector in Northwest Russia could help the modernization of the logistics by developing information technologies suitable for logistics operations.

The role of multinational organizations, such as the EU and the WTO is unclear. The Russians would like to treat each member of the European Union according to separate policies, which is against the basic principles of the EU. Also the membership in the WTO is a question mark. While it is said that

Russia wants to adjust its policies and regulations according to the rules of the WTO, the protectionist transportation strategy does not include these adjustments. For the world economy and thus the international logistics business the membership would be positive, but it requires for Russia to let go of its protectionism – which would be a difficult decision to make.

The following table presents the overall analysis of each transportation mode.

Table 29. Evaluation of the Competitiveness of Logistics Cluster Sub-sectors

Sub-sector	Evaluation	Brief analysis
Railroads	Competitive	Largest volumes and highest investment prospects make the railroads the most competitive mode. The TSR route will increase the potential, if it is correctly utilized.
Road	Potentially competitive	Needs a lot of enhancement in infrastructure, but as in Europe, the role of road transports will grow in the future.
Water	Potentially competitive	New investments in the ports will increase the competitiveness of the transport. The inland waterways are domestically important corridors, whereupon also their infrastructure should be updated.
Air	Potentially competitive	The use of Russian airspace for international flights between e.g. Asia and Europe will increase the air traffic. If the airports are modernized as planned and the aviation industry manages to increase its competitiveness, the Russian air traffic will grow once again because of the long domestic distances.
Other logistical operations	Low competitiveness	Though not examined thoroughly in this study, the overall picture based on literature suggests that the competitiveness in different fields in logistical services and operations is low in Russia. The situation will change when the Russian economy develops enough and/or foreign actors invest and participate in the development process. This offers great opportunities for Finnish actors as well.

6. Business Opportunities for Finnish Actors

The Finnish government has given a notable role to the general development of logistics. The Finnish Minister of Transport and Communications, Leena Luhtanen, has said that logistics will be one of the main issues during the Finnish Presidency in the EU (Palm 2005, MINTC 2005). According to Mrs. Luhtanen, emphasis has to be put especially on the development of Russia and Asia -related transportation (MINTC 2005). This kind of support from the governmental level is significant when considering the competence of Finnish logistics enterprises.

The results from the survey and the interviews made during this study are presented first in this chapter. After that an analysis of Finnish competitiveness and business opportunities in logistics is made.

6.1. Results of the Survey and the Interviews

In order to study the actual opinions within companies and different institutions, two survey questionnaires were made. These surveys included common and targeted questions; one questionnaire was constructed to describe the company view, and the other to describe the institutional view. The company questionnaire included questions about the company itself but also a wide set of questions about collaboration and general operations in Russian logistics. The institutional survey included more questions about Russia as an operating environment.

The respondents were selected by their relevance to the Russian logistics business by emphasizing Southeast Finland location. First, all the selected companies and institutes were called to gain their approval for the study. The result was that all of the planned respondents promised to participate in the study; the number was 22. The final response rate was 16 out of 22, meaning approximately 73 percent (see the following table).

Table 30. Sample Description

Type	Sent / returned questionnaires	Response rate %	Share of returned questionnaires
All questionnaires	22 / 16	73 %	100 %
(i) Companies	12 / 9	75 %	56 %
(ii) Institutions	10 / 7	70 %	44 %

The plan was to continue with deep interviews with each respondent after the “preliminary” survey results were studied. However, the respondents gave enough data in written format, so deep

interviews with all the respondents were not a necessity. However, based on the received responses, some of the respondents were selected and interviewed.

The main idea of the survey and the interviews was to gain a wide image covering the studied field from the Finnish perspective, where all different transport modes (rail, road, sea, and air) would be covered. The respondents gave accurate and reliable answers regarding their operations, but due to the small sample size the results cannot necessarily be generalized. The aim was not to achieve statistical reliability, but to get an idea of what the main trends and tendencies are and then make a qualitative analysis based on the respondents' opinions.

The questionnaires contained five separate subjects: Russian development, Finnish government, Competition, Collaboration, and Logistics and Value-Added services. The results of each of these topics are presented in the following sub-chapters.

6.1.1. Development in Russia – Operational Barriers

The respondents were asked to arrange different problems and barriers in Russian operations in order by their significance. According to the answers, governmental politics was the most important cause of problems in Finnish-Russian logistics (see Figure 48). Half of the respondents ranked it the number one cause, statistically the second largest problem was tariffs.

Especially the double tariff system used in the Russian railroads to direct the traffic to Russia's own ports distorts the competition. The distortion is quite significant in the transit traffic, where westbound transit moves from Finnish ports to Russian ones due to the lower prices. Also the new transportation strategy was criticized because of its protectionist nature.

The general bureaucracy hinders both operations performed from Finland and operations performed by local subsidiaries. For example the local authorities have been allowed to make their own interpretations of the regulations, causing unexpected changes in every day operations. As positive sides for the government actions in the 21st century the respondents mentioned strong investing to infrastructure and development of the customs code.

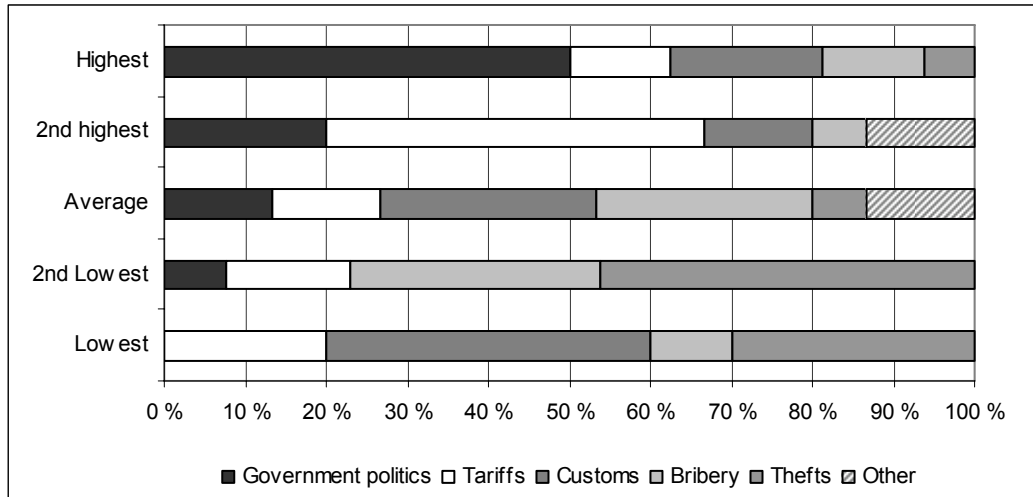


Figure 48. Significance of Different Barriers

Though the customs received more first places than tariffs, it is only the third when the average values are compared. According to the answers, the customs operations have eased the most in the 2000s. This has been enabled by the implementation of new border facilities, customs clearance and technology. Furthermore, there is a bill in the Russian State Duma, which would fasten the border crossings by reducing the number of border authorities (MINTC 2005c). At present there are totally seven different authorities at the border, but if the law is passed then only the customs and border guard would remain, which would hopefully reduce the bureaucracy.

Bribery was the fourth and thefts the fifth significant cause of problems – although criminal actions including the mafia might be thought to have quite an important role in Russian business, according to the respondents the risk of thefts has diminished in the 21st century. Other causes stated were protectionism, unexpectedly changing laws, overall bureaucracy, and the railroad culture.

Although the customs clearance has eased, there are still situations where the possibility of extra income allures customs officials to act badly. One recent example of a problem caused by customs officers is related to difficulties when a carriage was interrupted because of a truck breakdown. Moving the cargo from the broken truck to a working one to continue the transportation to the destination took nearly ten days, mainly because of the reluctance of the local Russian customs office. During this time the cargo was delayed and the two trucks – the broken one and the replacement truck – were standing in place just waiting for a permission to move the cargo.

The paperwork related to the change of vehicle was rejected several times when the local customs officer found some irrelevant defects in it – these defects included for example the color of a stamp, which was not valid in black, but had to be blue. This case demonstrated that vehicle breakdowns

during transportation might cause a lot of trouble – the customs officers had some sort of template in case of a need to change the carrier, but in the hope for extra income (in other words bribery), the officers acted as if they were unaware of what should have been done. According to Pulkkinen (2005) from Avain-Trans Ltd. this kind of method is often used by the Russian customs – if no money is offered, the customs officers will usually find defects in the papers.

6.1.2. Role of the Finnish Government

The respondents were asked to describe what kind of position the Finnish Government has in Finnish-Russian logistics. One respondent phrased the situation with the Finnish Government as follows: “*Act or even understand*”. This might indicate that there is some dissatisfaction towards Finland’s actions in the logistics. There were three major issues in which the government should be more aggressive: financing issues, infrastructure upgrades, and policies with Russian authorities.

The most often mentioned aspect was making the financing and securities more easily available, especially to Finnish SMEs who now struggle in the capital-intensive business. The growth of Finnish companies should be supported – though some company might be a major one in the Finnish scale, the vast Russian markets makes even the large companies look quite small. The infrastructure also needs capital; one example mentioned is the E18 project which would ease the congestions on the route from Finnish ports to Vaalimaa and the Russian border (see Figure 49). According to the respondents, it would weaken the Finnish competitiveness if the updating of traffic lanes is still disregarded. The taxation of at least fuel duties should be lowered to guarantee better competitiveness against Russian and other actors.



Figure 49. Motorway from Turku to Vaalimaa – the E18 project (Tiehallinto 2005)

Also politics was considered to have a significant role. Finland should preserve and improve its relationship with Russia in order to ease negotiations in various upcoming issues. These include for example the Saimaa canal, whose lease should be continued as soon as possible. Through a strong

relationship Finland might try to affect Russian internal political issues. Leaving Russia alone with its problems would be wrong.

The respondents' answers to the question about future threats in Russian operations were quite diverse. The answers included the following issues:

- Interruptions in the development of Russian economy caused by changes in oil prices
- The question of Russia's WTO membership
- Development of Russian administration (e.g. customs)
- Recession and business cycles
- Union and labor market issues in Finland
- Russian protectionism
- Uncontrolled opening of competition
- Asia-related issues: globalization, the China-phenomenon, and diseases like the avian influenza (also known as the bird flu)

6.1.3. Competition Situation

The research concerned competition between Finnish, Russian, and Baltic companies from Finnish companies' point of view. There were questions about the competitive advantages of each country, and which one is the strongest competitor against Finnish firms. There were also topics related to the EU enlargement.

The respondents mentioned some general factors which affect to the role of Finland in Russian logistics. They are listed in Table 31.

Table 31. Factors Affecting the Development of the Demand of Finnish Logistics Services

• Competition increases	• Free competition in the EU (e.g. internal railroad traffic will become free in 2007)
• Consumer incomes rise	• Chances in distribution chains
• Russia's economical development	• Russian logistics actor establishments in Finland
• Russia's WTO membership	• Protectionism
• Technologies change	
• Globalization	

The respondents saw the Russian logistics markets as quite attractive but also highly competed (see Figure 50). The growth expectations were seen as quite positive – the majority thought that the Russian economy and the logistics industry expectations were either strong or extremely strong.

However, the view on the demand situation was not that positive; one third saw it only as average, while two thirds thought that the demand is strong. On the other hand, competitive expectations were seen as extremely strong by more than half of the respondents, and 93 percent thought that the competition is at least strong.

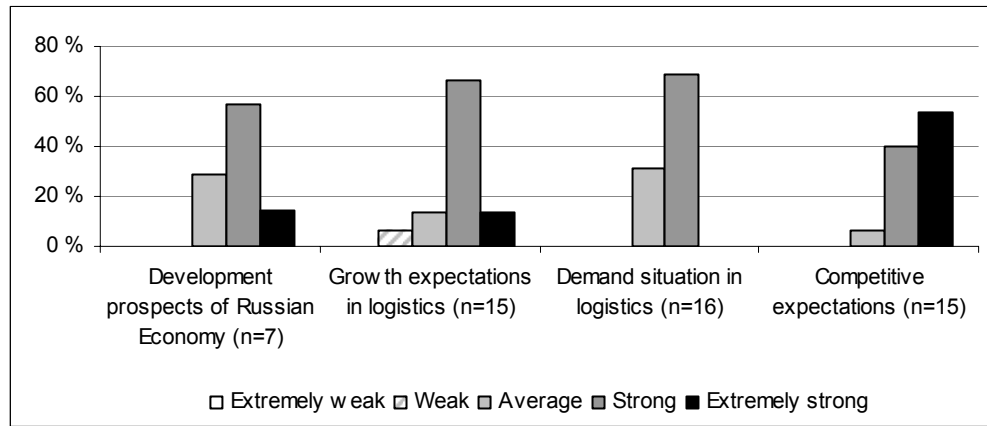


Figure 50. Attractiveness of Russian Logistics Markets in 2005-2007

According to the respondents, in recent years (2000-2004), most of the increase in competition in Russian logistic markets has been caused by Russian firms. Both the number of firms and the price competition have increased most by Russian firms when compared to Finnish and Baltic ones (see Figure 51). According to the results, there is a high increase especially in the number of Russian logistics firms.

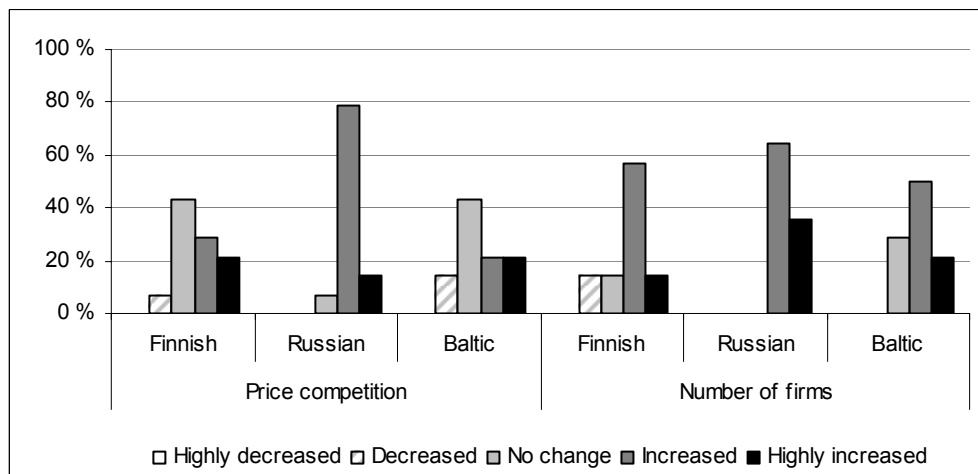


Figure 51. Development of Competition by Price and the Number of Firms by Finnish, Russian, and Baltic firms in 2000-2004

The respondents thought that Russia is a stronger competitor than the Baltic States against Finnish firms. However, the result was not unanimous: some of the respondents thought that the Baltic firms may threaten Finnish companies as well. The competitive advantages mentioned in the answers are listed in Table 32.

Table 32. Competitive Advantages of Finnish, Russian, and Baltic Companies

Country of origin	Competitive advantages
Finnish	<ul style="list-style-type: none"> • Reliability, flexibility, speed, diversity, and safety of transports • Logistical knowledge and quality, internationality, customer services, good infrastructure, available capital • Closeness to Russia • Expertise in information and communication technologies and other high-end technologies • Reputation of a fair associate, possible to trust on spoken word
Russian	<ul style="list-style-type: none"> • Knowledge of Russian language and culture, closeness • Cost advantages (workforce, supplies, etc.), taxation, and governmental protectionist policy • Strong competition • Flexibility
Baltic	<ul style="list-style-type: none"> • Knowledge of Russian language and culture, and closeness depending on the destination • Price and taxation • Flexibility, specialization, efficiency, strong competition, know-how

Estonia seemed to be the strongest competitor of the Baltic States due to its current state of development and large investments in the ports – especially the new container port in Muuga was mentioned. However, some respondents thought that also Latvia could become a significant competitor when its ports and border formalities develop enough. There are many Russians in Latvia and the costs are lower than in Estonia, said one respondent. It was also mentioned that if Belarus will manage to improve its administration, the land route from Russia to Germany via Poland will become a serious threat to Finnish ports.

The EU's enlargement was not as significant as the author would have thought it to be, when the survey results were analyzed. The answers indicated that there have been no changes in the operations after the enlargement in May 2004. However, some respondents argued that more and more companies are planning to expand or establish subsidiaries in the Baltic States – there are now better opportunities to partnerships and alliances as there used to be, due to the EU laws and regulations. Also according to some respondents the competitiveness of the Baltic States has increased but so has the rivalry inside the three states.

The respondents' opinion on the WTO and Russian economy was clear. The WTO membership is thought to be a necessity because it would increase Finland's competitiveness by regulating the operations more clearly (e.g. by removing the double tariffs from Russian railroads). However, the role of the EU was mentioned to be two-sided – it helps to create a more stable business environment but Finland might suffer because of its size – the special needs of Finland are meaningless to the EU giants.

6.1.4. Collaboration Issues

Collaboration has great importance in global and networked business. The questionnaire included questions about collaboration among Finnish and between Finnish and Russian/Baltic companies. A third category, collaboration among companies and universities was also briefly covered.

Only a few respondents answered the questions concerning the utilization of collaboration possibilities. The clearest lack of collaboration was among Finnish companies and between Finnish companies and universities. The collaboration between Finnish and Baltic/Russian companies also has growth prospects that are not realized yet, though some respondents thought that mutual benefit from collaboration might be hard to find with Baltic partners. The respondents seemed to think that Finnish and Russian companies should strive for collaboration – the parties have common interests and complementary production factors. There was hardly any knowledge about collaboration between Russian and Baltic companies; one respondent thought that the amount of collaboration between these two is low.

According to the survey results, the most important fields of collaboration between Finnish and Russian logistics were investments, financing, training, and marketing. Also services, workforce, and customs clearance were areas, where collaboration would be needed. The majority of the respondents thought that collaboration in general will increase in the future, especially in the following areas: local knowledge concerning bureaucracy, distribution chains and warehousing operations, terminal operations, and forwarding and clearing of goods. To the question of whether the relationships between Finnish and foreign partners are equal, the answers differed. Some respondents thought that the difference in living standards makes the relationships with Russian and Baltic companies unequal, while others did not see differences in the relations.

In the company-addressed survey the companies were asked to describe their past (2000-2004) and the future (2005-2007) situation in collaboration. The collaboration was divided into two categories; the number of partnerships (to find out whether the network in which the company operates has grown) and then the amount of collaboration in general (to find out how much the collaboration has grown in the company's operations). The questions were further divided to three sections: Finnish-

Finnish, Finnish-Russian, and Finnish-Baltic collaboration. There is no scale measuring the absolute change in collaboration, the graphs describe the share of companies which increased/decreased their amount of collaboration / number of partnership in these cases.

The results were quite even between the different countries when the 2000-2004 collaboration development was compared (see Figure 52). Collaboration among Finnish and between Finnish and Russian companies had grown in about 80 % of the companies, while in collaboration between Finnish and Baltic companies the figure was about 60 %. However, the trend was obvious when the future estimates were compared – all the respondent companies stated that they will increase their collaboration with Russian companies in the period 2005-2007.

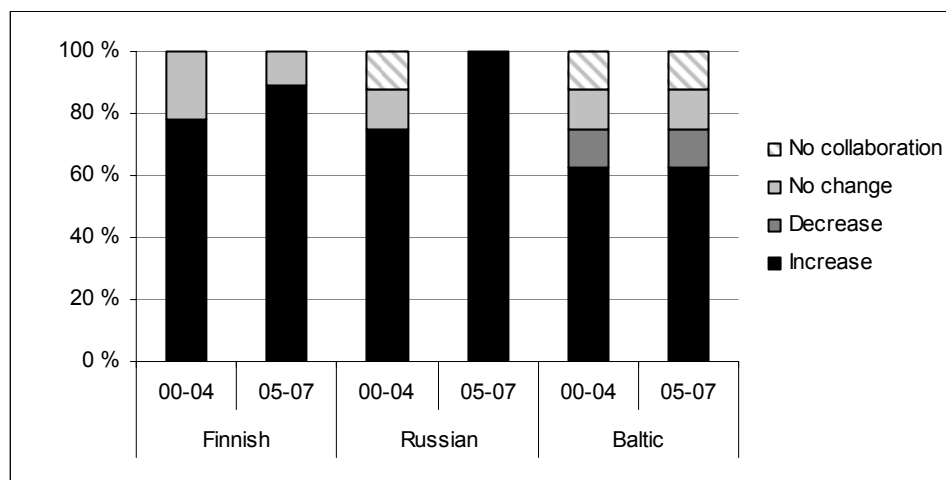


Figure 52. Finnish Companies' Collaboration in 2000-2004 Compared to the Estimate for 2005-2007

The answers to the question concerning the number of partnerships showed that over half of the Finnish companies had increased the number of their Russian partnerships during 2000-2004 (Figure 53). One third of the Finnish companies had increased the number of their partnerships in Finland and the Baltic states. When the future estimates were compared, the Finnish companies seemed to have deepened their Russian operations by increasing mainly their Russian partnerships.

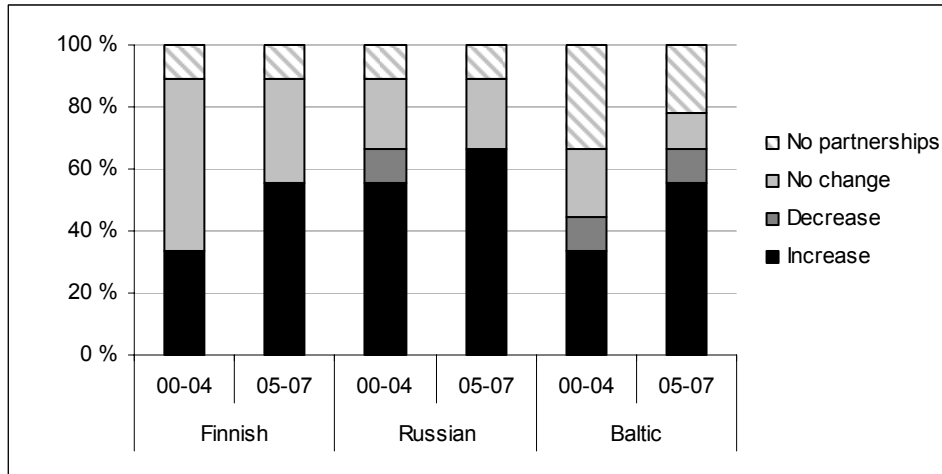


Figure 53. Finnish Companies' Partnerships in 2000-2004 Compared to the Estimate for 2005-2007

6.1.5. Logistics and Value-Added Services

The respondents were asked to list trends which will have a high importance in Finnish logistics. The value-adding services were mentioned most often, including further processing of products in warehouses, offering total services, and the growing importance of after sales marketing. Outsourcing, economics of scale and globalization were also mentioned often. The consequences for these trends were described as unit load transfers, centralization of distribution and warehousing, and stronger competition in prices and between suppliers. Other trends mentioned were the development of distribution chains, networking, intelligence logistics including information systems and electric identification of products, establishing subsidiaries in Russia / the Baltic States / other new EU countries, and development and centralization of procurements.

According to two thirds of the respondents the largest factor of the competitiveness of Finnish logistics was the overall quality in logistics services, meaning safety, reliability and speed when compared to Russia and the Baltic States. Value-adding services like the integration to global logistics networks were both mentioned by one third of the respondents.

In the survey, a large importance was given to topics related to Value-Added Logistics (VAL). First the respondents were asked to describe how they understand the term VAL, by giving examples of it. These examples, categorized into four groups, are presented in Table 33. Two thirds of the respondents mentioned issues related to the distribution of goods, downstream operations were mentioned by 58 percent of the respondents. Half of the respondents mentioned warehousing, while issues related to documents (17 %) and PDI (8 %) had lower response rates. The most mentioned single topic was tracking and controlling systems (mentioned by 25 %).

Table 33. Different Modes of VAL according to the Respondents

Main category	Sub-categories
Distribution	<ul style="list-style-type: none"> • Information logistics, tracking and controlling systems • Collector-distributor services (feeder) • Protection of vulnerable carriages (e.g. against thieves)
Downstream operations	<ul style="list-style-type: none"> • Assembly • Additional installations, fitting of manuals and other accessories • Unloading and re-packing • Marking of goods (e.g. product marks, bar codes, price tags)
Warehousing	<ul style="list-style-type: none"> • Special warehouses • Intermediate depots
Others	<ul style="list-style-type: none"> • Compilation of needed documents • Pre-Delivery Inspection (PDI)

The next question handled VAL from the research point of view. The respondents were asked to mention specific topics of VAL which are essential for Finnish competitiveness but still need more research and development. The answers differed quite much; either there was no specific area of R&D which all agreed upon or the respondents wanted to keep secret their core competences by not answering accurately. The most often listed topics were related to transport and distribution, like telematic tracking systems, the utilization of the Trans-Siberian Railroad, and guaranteeing the safety and quality of transports. The second largest group was problems relating to Russian bureaucracy; problems in border crossings and relationships with Russian authorities. Warehousing was the third often mentioned factor. The ownership / management of Russia-based logistics chains or companies, as well as the mail-order operations in Russia were both mentioned by about ten percent of the respondents.

However, according to Kilpeläinen (2005) the question of VAL services in Finland is not black and white. He thinks that the present VAL services are mostly based on harmonization. He states that harmonization can be based on technology or customs regulations. Technology-based harmonization includes operations where the transport equipment is fitted to the Russian laws and standards, for example changing the gauge of the railroad cars. Customs regulations based on harmonization include operations done to lower the customs duties – for example fitting two containers in one shipment, which about halves the duties. Kilpeläinen says that besides harmonization-based operations there are also “authentic” VAL operations, but the overall volumes in these are quite low. Operations based on harmonization do not generate any added value to the end products – the research should concentrate on the real VAL operations.

A majority of the respondents believed that the know-how in VAL services is the best in Finland, but Russia and especially the Baltic States are catching up the advantage. At the moment the more expensive goods are handled in Finland, because of the low losses and high know-how. In addition to the reliable, safe and fast basic operations, the ICT-related services are a strong field of Finnish expertise. However, if only direct costs and prices are compared, Finland might not survive when the Baltic actors develop enough. The growth of international logistics chains might also threaten the smaller Finnish actors.

What issues have an influence on the maintaining of Finnish competitive advantages? *“To maintain the current competitive advantages Finnish actors should be able to supply what the customers need”*. This comprehensive answer cannot be totally wrong, at least when combined with the right price/quality. One issue is the combination of Russia-related transit traffic and Finland’s own foreign trade and its efficiency. Other more specific issues are capital issues, the underdeveloped state of Russian ports, the development of the Germany-Poland route, the WTO issues, Russian customs behavior, governmental favorable acts, and the benefiting from synergies among Finnish actors.

6.2. Aspects of Competitiveness

The survey and the interviews handled issues relating to the competitiveness of Finland, Russia, and the Baltic States. Based on the answers, the overall competitiveness of Finnish actors is described in the following sub-chapters.

6.2.1. Finnish Competitiveness in the Russian Logistics

Finland is in a somewhat difficult position. The direct costs of using the ports of Finland as a transit route to Russia are higher than in the other possible routes presented in chapter 3.4.2. However, the total quality issues are handled better in Finland, making the net costs relatively competitive against the other competitors.

According to most of the survey answers, Russia is the strongest competitor against Finland. However, the author sees that although Russia will become the strongest competitor in the long run, the Baltic States will give a good challenge in the mean time. From the respondents’ descriptions of the competitive advantages of different countries included in the study, it can be noted that many of the listed advantages are relatively same in Finland and in the Baltic States. Furthermore, the Russian language skills are significantly better in the Baltic States than in Finland. Of the Baltic States both the respondents and the author would name Estonia as the strongest competitor against Finnish companies in Russian operations – also Latvia could increase its competitiveness in the next few years. The author sees a bit surprising, however, that the respondents did not see a noticeable difference in the Baltic States’ operations since the enlargement of the EU in May, 2004. One might

have thought that the EU membership would have increased the Russia-related traffic in the Baltic States.

Finland needs to improve from the present if it wants to preserve its share of the Russia-related transit traffic. However, in the spring of 2004, there was a strike in the Finnish ports. Herrala (2005), the managing director of the port of Hamina, says that while the direct consequence of the strike was delays in shipments, the indirect and stronger consequence is the setback in marketing of Finland as a safe transit route. During the strike, many shipping companies were forced to use alternative ports, for example in Estonia. The question remains whether those companies will return to Finnish ports.

Collaboration between Finnish companies, institutions, and educational units must be practiced more than before. According to the respondents of the survey, there is a clear lack of collaboration. In order to provide efficient logistical operations, the logistics operations need to be developed. The author sees that the highly educated Finnish workforce in collaboration with educational units like universities should be able to solve any problem within the logistics. However, if there is not enough will to combine the scarce resources, the opportunities might be lost.

If Finland would like to seek partners from other countries, Sweden could be an interesting option. Sweden and Finland combined formed Russia's third largest import partner in 2003 (Goskomstat 2004a). Swedish companies would strengthen the resources of the Finnish ones when conquering the vast markets of Russia.

6.2.2. Governments of Russia and Finland

The competitiveness of Finnish companies is affected by the actions of both Russian and Finnish governments. While the Russian government did not get excellent grades from the respondents, also some issues where the Finnish government could do better were mentioned.

The lack of investments is the key issue when the Russian government is evaluated. The products that are transported via Finland are usually expensive ones – the key market areas of these products in Russia are St. Petersburg and Moscow. The traffic between Finland and these cities has been intensive, and the distances are relatively short. However, the road infrastructure is on average highly worn-out. Although Russia has planned to renew these routes, both road and railroad, the funding and time schedule are uncertain factors.

The respondents ranked the Russian government policies, the tariff system, and the customs as the main operating barriers. The authorities cause problems in the border zone. For example in the spring 2005, the Russian customs officers delayed the opening of the Saimaa Canal for over a week, which

caused delays in shipments and thus gave a negative image to the route. The Russian government should also update the legislation concerning transportation issues. Intermodal (or multimodal) transportation is considered illegal by the Russian law. The law states that the carriage is to be done by one single transport mode. This has caused a lot of paper work when such a transport mode has been used. (Hernesniemi et al. 2005, p. 126) The problem concerns all the actors in Russian logistics.

Another major issue which lowers the competitiveness of the Finnish routes is the double tariff system used in Russia. There are different railroad tariffs depending on the destination and purpose of the shipment – the Russian ports are supported at the expense of international routes. For example the tariffs to the port of St. Petersburg are lower than for example to the port of Kotka. The difference in tariff costs can be three- or even four-fold (Laukkanen 2004). This distorts competition and supports the ports of Russia. To change this situation by negotiating seems to be useless; Russia does not want to change its protectionist policies – or its transportation strategy. However, if Russia becomes a member in the WTO, the double tariff system should be revoked. That would help to maintain the competitiveness of the Finnish route.

The Finnish government has not been able to maintain sufficient investments on the transport infrastructure. Especially the worn railroad network and narrow road network are in need of funding in Finland. The respondents were not fully satisfied with the political issues between Russia and Finland either. The third mentioned issue of funding, for example of starting companies, is also important. Logistics is capital-intensive business and the expenditures are quite high. Moreover the size of Russian demand pushes Finnish companies to increase the number of their equipment, such as trucks.

6.3. Possible Business Models

Russia-related logistics can be divided into two categories: the growing transit traffic, in which Finland has at present a strong role, and other logistical operations in Russia. These two are related to each other quite a lot - this study emphasizes the logistical services in value creation in both categories. It is not very likely, however, that the current situation where about one third of goods in value imported to Russia goes through Finland (Hernesniemi 2004) is permanent. When the Russian economy and infrastructure develop enough, the transit traffic will at least decrease – in this situation the main question is how Finland can benefit from its location and know-how also in the future.

There are several possible business models related to Russian logistics. Based on the study, the author has come up with two profit-making business models for Finnish logistics companies related to Russian operations. The basis for the first model is the current system where Russia-related transit traffic is handled in Finland, but the model is enhanced with increased utilization of VAL services.

The second model is establishing operations in Russia, meaning the management tasks of logistics companies, while the workforce would be Russian. The most significant factors concerning both models are presented in Table 34.

Table 34. Two Business Models for Russian Operations

Business model	Characteristics
VAL operations in Finland	<ul style="list-style-type: none"> + High quality + Underdeveloped Russian infrastructure + Long traditions as intermediate - Problems in border crossing - Dependable from the Russian customs legislation to some extent - Higher costs compared to Russia
Establishing operations in Russia	<ul style="list-style-type: none"> + Large markets, wide opportunities + High level of logistics know-how compared to Russians
a) VAL operations	<ul style="list-style-type: none"> + Low labor costs in Russia
b) Logistics chains in general	<ul style="list-style-type: none"> - Growing competition - Infrastructure deficits - Relatively high risks

Russia is seen as a potential market and there is a general will among the Finnish respondents to be a part of the highly competed Russian markets. However, the Finnish actors are a bit afraid of the risks in Russian operations. In the answers of the survey it can be seen that the risks are thought to be quite high and diverse. There are always threats in business, and especially with Russia. But as said above, the risks have to be calculated and minimized. Finnish administration should ensure their competitiveness by listening to the actors and then deciding on the right actions.

6.3.1. VAL operations in Finland

VAL services are at present one source of income in the transit traffic via Finland, but can they be the major source of income in the future? These services usually require a lot of labor intensive work (Gröhn 2005b), such as installations (see the following box about VAL in passenger car handling). Because of this, the operations are likely to move to cheaper countries, which in this case would be Russia itself and the Baltic States. Gröhn also says that if companies were about to invest on Russian transit traffic-related infrastructure in Finland, the repayment period should be calculated as short as possible. Another investment model could be copied from the port of Kokkola, where the planned investments are concentrated on serving the local Finnish industry, not transit traffic (Witting 2005).

However, one cannot forecast the exact time that it takes for Russia to “normalize”. According to Gröhn (2005) the time needed for this normalization could be about 20 years or even 50 years. It can be seen that the Baltic Countries are transforming faster, and thus are likely to compete against

Finland earlier than Russia. In car handling, some Finnish actors (Nurminen and Assistor) are already about to establish installation halls in Estonia (Pöysä 2005). This development should be remembered when planning new investments in Finland – the operations might move from Finland.

Forms of VAL in passenger car handling (Assistor 2005; Perttu 2005)

Assistor – a Finnish car logistics center – is a major car handling company, which delivers cars into Finnish, Russian and Baltic markets. Assistor employs 178 workers in Hanko, in which it has a hall in the free port area. Inside the hall extra installations and inspections are made to the imported cars. This process is a form of VAL, Value Added Logistics.

Assistor divides its installations into the following three categories: 1. Reaching Finnish standards, 2. Importer campaigns, and 3. End-user wishes. They have also PDI (Pre Delivery Inspection) services, which include removal of protection wax and delivery inspection. The installations might include the following accessories: automatic daylight function and seat heaters (group 1), different campaign products like air conditioning, radio and rims (group 2), and specific end-user wishes etc. cylinder block heaters, navigation systems, backing radars, towing hooks, cruise control, winter tires, and even gaming consoles (group 3). In PDI, for example the surface of the car is inspected, the liquid levels checked, and documentation like manuals and warranty documents added.

Besides installations, Assistor deals with clearance documentation and organizes transportations from factories to Hanko and further to dealers in Finland, Russia and Estonia. The company has a temporary space for installations also in Tallinn, while a permanent space in the port of Paldisk is being built.

However, according to Wires, the managing director of Assistor, these VAL services are not utilized yet on Russian import cars. There are two main reasons for that; the labor costs are high in Finland and it would cause a lot of extra paper work because of customs clearance.

Kilpeläinen (2005) thinks that one way to benefit from the Russian transit traffic would be establishing a free economic zone (FEZ) in the border of Finland and Russia. The author thinks that this idea might be a good solution, at least for the present. Kaliningrad has not been able to fully profit from its FEZ status, but in that case the difficult connections between Russia and Kaliningrad are the main deficit. However, if such a FEZ would be placed on the border of Russia, then the customs related issues would be easy to resolve.

6.3.2. Investing and Becoming Established in Russia

Usually in trade between the EU and Russia the supply chains in Russia are managed by Russian operators. The working environment is experienced to be too difficult for western standards and thus the Russian partner takes care of the logistics. (TEDIM 2004) As there is a lack of foreign operators

in Russian logistics, the opportunities for Finnish companies are wide. Finland has done business with Russia for a long time so the experience exists. The question remains, will we take that opportunity?

The difference in ERDI figures does not support the growth of Finnish exports to Russia in price sensitive products. Due to the cost structure of the Finnish industry, Finnish products are not able to compete with Russian products when it comes to price. This is why for example Fazer Bakeries has moved its Russia-related production to Russia. Instead of exporting, the strong euro currency gives a good chance for Finnish companies to make investments in Russia. A good example is IKEA, which has its own production facilities and a growing department store chain in Russia – the competing Finnish products face a hard time trying to compete against such a giant.

Investing in Russia has been quite hard for the majority of Finnish companies. Customs regulations, uncertainty in legislation, and slow bureaucracy have lowered the willingness to invest in Russia while the investment eagerness towards Asia, especially China, has grown (Ali-Yrkkö, Lindström et al. 2004, p. 19). On the other hand, according to a survey made by PBN (2005), the business is going well for foreign companies who have invested in Russia. Most of the respondents in this study thought that the future prospects in Russia are good. Also the risks were thought to be bigger than in other transitional countries.

However, besides risk avoidance, there are also positive signs from Finnish companies. For example John Nurminen Plc. has recently acquired a 49 percent share from the St. Petersburg-based railroad operator ZAO Irtrans. By this investment it gained ownership to the whole railcar stock of ZAO Irtrans. One of the goals of this investment is to increase the company's local knowledge of Russia. (Kauppalehti 2005b) These kinds of investments are needed also in future if Finnish companies are willing to participate in logistics operations management in Russia.

The Finnish experience of the VAL services might be a competitive advantage when the majority of these operations are moved to Russia. Moreover, the basic logistics chains are in need of efficient management.

Value Added Logistics

The question about mass customization is interesting. If large global companies increase their use of logistical postponement, in other words postpone the final assembly of their products, the Finnish actors would have a good opportunity to manage the distribution centers in which the final assembly would take place. It might be useful to establish these centers in to Russia by Finnish actors – there

are many reasons for this, but to simplify the situation the author presents the two most important ones.

Firstly, assembly is usually labor intensive and would thus benefit from the lower unit labor costs of Russia. Secondly the manufacturers of the modules usually prefer high quality – the end user does not know who else to blame for product flaws but the manufacturer. Thus the Finnish know-how on quality issues could be utilized. The problem is how to connect the manufacturers' demand for the logistical postponement operations with the Finnish actors, and again, who would be willing to invest in Russian logistics.

Management of Russian logistics chains

The present situation in Russian industries, processing of raw materials and bulk products, does not require much logistical services, only logistics in the form of transportation (The World Bank 2004a, p. 3). As the economy develops and the industries begin producing more complex products, the need for logistical services will grow. Finnish logistics companies should realize these business opportunities in Russia and establish themselves on the markets.

Gröhn (2005b) sees opportunities for Finnish companies in the management of Russia-based supply chains. When the VAL services move after cheaper unit prices to Russia, management could be a great chance for Finnish actors, who are already familiar with these services and general operations in the supply chains. Gröhn sees that the competition between different supply chains will grow and value-add services for supply chains become a major competitive advantage. Customer relationships management, brand management, and value chain management are topics where Finnish experts could establish operations in Russia. There are risks involved when doing business in Russia, but the opportunity of massive growth is worth those risks, claims Gröhn. Also many major global enterprises are already interested in doing business in St. Petersburg and elsewhere in Russia. However, projects are often restrained because of the difficult conditions combined with the lack of expertise. (Sahiluoma 2004) In the author's opinion this might give an excellent opportunity for Finnish SMEs, which do not have the funding to go Russia on their own.

Russia will eventually develop enough to offer a reliable and stable environment for globally competitive business – however this development process might take a while. At first competitiveness will occur in more basic products, which do not include higher technology. However, the most difficult task for Russian producers will be branding, especially in the consumer durable products. It will take a while before Russian brands are appreciated and trusted to the same

extent as for example Nokia. With hard work and plenty of marketing investments, someday Russia might have its own Mercedes-Benz or Nokia.

7. Conclusions and Summary

This last chapter presents the main findings of this study. The following conclusions have been made by the author on the basis of the information gathered during the study. For a start the first research question is dealt with when the conclusions about the competitive analysis of the Russian transport logistics cluster are presented. After that the second research question is answered by describing the situation of Finnish companies in the above mentioned cluster.

As mentioned in the introduction, the work has been quite challenging. However, the author is glad to say that the outcomes of this study exceeded his expectations.

7.1. Findings about the Northwest Russian Transport Logistics Cluster

Russia is unique. The Soviet period left its marks on the present outlook of Russia, and the Northwest Russian transport logistics cluster is not an exception. The massive size of Russia could offer plenty of opportunities for business in general but the current economic state of Russia has forbidden the full utilization of that potential – at least up until now.

At a glance the present state of the four studied transportation modes is weak. A more profound examination of the issue gives reason to assume that the railroads are ahead of the other transportation modes in terms of competitiveness. Railroads are the traditional, largest and most reachable transportation mode in Russia. Moreover, the utilization of the Trans Siberian Railroad will increase the overall competitiveness of railroads. Lack of investments and aging, congestions, and the state ownership can be listed as negative sides of railroads.

The author categorizes the other transportation modes, road, sea and inland, and air transportation as “potentially competitive”. All these suffer from aging due to low investment levels. Road transportation is going to increase its share because of its flexibility. Sea and inland water transportation will benefit from their cost structures if the infrastructure is renewed properly. Air traffic will increase in general and the possibility of using Russia’s airspace as a route for global flights connecting Europe and Asia will accelerate the volumes. But the infrastructure is, once again, significantly old.

The role of the Russian government is quite important. The author would say that it is more important in Russia than in most countries, mainly because of the formerly exercised centrally planned economy. In the transport logistics, the most important issue is the funding of infrastructure and equipment investments. Despite the positive CA, net capital flows out of Russia, and surplus budgets, the investments have not been as high as they would need to be in a country of such a fast economical

development. The other aspect related to the government is its protective policies, which are not in line with the wished membership in the WTO.

The inherited “business model” with low level of knowledge about market economy is a great burden for Russian business in general. Luckily the trend seems to be that more and more students are trained according to higher western standards. In the author’s opinion highly educated management could be useful for example in the privatization processes. These processes are not well executed in Russia, though they are quite important for Russia in order to gain the ability to compete globally. Overall the interaction among Russian companies is only just developing – in the Soviet model the connections and partnerships were given by the central administration.

7.2. Findings of the Survey

The responses to the survey were a positive surprise. The author was told that there is some sort of barrier which prevents companies and to some extent also the institutions from telling the whole truth about their opinions on logistics relating to Russia. However, the author received good answers from both the survey and the interviews; also the response rate was satisfactory. Some of the questions received quite diverging answers, which might be due to the complicated structure and low transparency of Russian logistics.

7.3. Finnish Competitiveness Issues

Partnerships and networks must be created and utilized more in order to develop Finnish competitiveness. The author thinks that for example collaboration with the excellent Finnish universities should be increased, which is true also according to the respondents. Also collaboration among companies should increase from the present state. Another interesting point is that the EU enlargement to the Baltic States has not changed the competitive situation to the extent the author thought it would have changed. The respondents thought that Russia is still the number one competitor against Finnish companies, while in the author’s opinion the Baltic States and especially Estonia should be considered as a more imminent threat.

According to the respondents, the Finnish competitive advantages do not differ much from the ones of the Baltic States. When the competitive advantages were listed, both had same kind of characteristics, including e.g. flexibility, know-how, and specialization. Of course at present the competitive environment and infrastructure are better in Finland but the author sees that in a few years Estonia and maybe Latvia will truly challenge Finland. Furthermore, the problems in sea transport in the Finnish ports caused many delays in 2005 and thus decreased the attractiveness of Finland as a transit route. These problems moved traffic to the Baltic States at least to some extent.

7.4. Possible Business Models

The growth figures of the Russian economy have been great; one of the main reasons is that Russia has benefited from the rise of global oil prices. While Russia is overall still quite poor when it comes to the average figures (for example the GDP per capita), there are still a lot of middle and upper class people whose incomes are high – also when measured by western standards. These people demand quality products which are usually manufactured abroad, for example electronic equipment from Asia and cars from Europe. Because Russia does not yet have enough infrastructure to handle the imports appropriately, the role of Finland as a middleman and a mentor can be utilized for now. Also the normal trade between Finland and Russia has grown again and it seems that Russia might take the first place as Finland's leading trading partner in the very near future.

The development of Russia means that its own production will be able to compete against Finnish products, thus diminishing the currently increasing Finnish exports. However, the Finnish exports in more complicated products, like telecommunication equipment, are likely to continue growing. The Russian imports of modern cars and Asian electronics belong to the same group. As a consequence of this, the transit traffic of more valued products will continue to Russia. While the Baltic States are specialized in bulk transit traffic, the transit traffic via Finland will continue if the operations are kept competitive. Because of the higher cost structure, the Finnish companies have to maintain the high level of quality in operations, which will compensate for the higher prices.

The author has come up with two business models for the Finnish logistics operations related to the Russian markets. The Finnish companies could try to specialize themselves into VAL services. However, the more attractive choice would be to affiliate into current Russian logistics chains or to establish new ones.

If the operations are continued in Finland also in the future, some changes must be done in order to maintain the competitiveness. Collaboration is one of the key elements in this, but it would also be good to consider building a free economic zone (FEZ) on the border between Finland and Russia. This way the customs operations could be eased and the costs of operations could be lowered. The author thinks that the case of a FEZ should be studied thoroughly to avoid any possible pitfalls before utilizing it. When Russia develops enough, this FEZ arrangement could be abandoned if it does not provide some clear advantages for both parties.

The author sees, however, that going to Russia would be the most profitable business model. Although there are various risks with quite high probabilities, the size and potential of the Russian markets are too vast to be abandoned from the investment plans. Finnish logistics SMEs could offer valuable partnerships to larger international logistics enterprises. With the help of Finnish know-how

and the adequate resources of an international company, the outcome could be fertile. The author also thinks that the country level an interesting partner for Finland could be Sweden. Finland and Sweden combined would cover a quite large share of the Russian imports and thus the collaboration could be useful for both parties.

The author thinks that there are two profitable logistics business opportunities for Finnish companies in Russia. The first one is to utilize the currently held know-how of VAL services by establishing a logistics company in Russia and thus benefiting from the cheap labor force. The second one is to affiliate into the Russian logistics chains and start to manage them in a competitive way. Both these models are not easy to execute. But if a company manages to do so, the potential of Russian markets will guarantee extensive opportunities.

7.5. Future Research

There are two main issues which should be studied more carefully: establishing an economic free zone on the border of Finland and Russia, as well as establishing logistics chains in Russia. Both these studies should be done quite soon, before companies from other countries will take an advantage of the potential of Russian markets.

The FEZ study should include for example future issues of the development of transit traffic. Also the analysis whether it would be profitable or not is very important to be done before any FEZ is executed. The second issue, logistics chains in Russia, is important for Finnish companies which are about to move their operations to Russia. The topics for this study could include for example how to find the right partners and which relationships would be needed.

Overall the Russian logistics seems to be quite an attractive target for investments. While the present state of the country is still quite weak, the future scenario is strong. The markets are vast and the potential exceptional. The question remains whether the Finnish companies can manage to exploit the opportunities presented here and thus benefit from their gigantic neighbor.

In the words of the Russian poet Fyodor Tyutshev (1866):

“Intelligence will not help you to understand Russia; nor can you gauge it with an ordinary yardstick. Its character is different – you can only have faith in Russia”

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Jari Gröhn	<i>Ministry of Transport and Communications, Finland</i>
Anne Herneoja	<i>Finnish Rail Administration</i>
Tommi Kivilaakso	<i>Eastern Customs District, Finland</i>
Raimo Mansukoski	<i>Finnish Freight Forwarders Association</i>
Pekka Ruotsalainen	<i>Keyeast</i>
Antti Seppälä	<i>Finland's Transport and Logistics SKAL</i>

Companies

Jouni Ahrela	<i>Steveco Ltd.</i>
Seppo Herrala	<i>Port of Hamina</i>
Jaakko Kilpeläinen	<i>Saimaa Lines Ltd.</i>
Tapio Mäkinen	<i>SE Mäkinen Ltd.</i>
Tiina Mäkinen	<i>VR-Cargo Ltd.</i>
Juha Pulkkinen	<i>Avain-Trans Ltd.</i>
Pertti Silvennoinen	<i>Beweship Ltd.</i>
Timo Turunen	<i>Finnair Cargo Ltd.</i>
Juha Willberg	<i>Port of Mustola</i>

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Figure A.1 Maps of Estonia (top), Latvia (middle), and Lithuania (bottom) (CIA 2005)

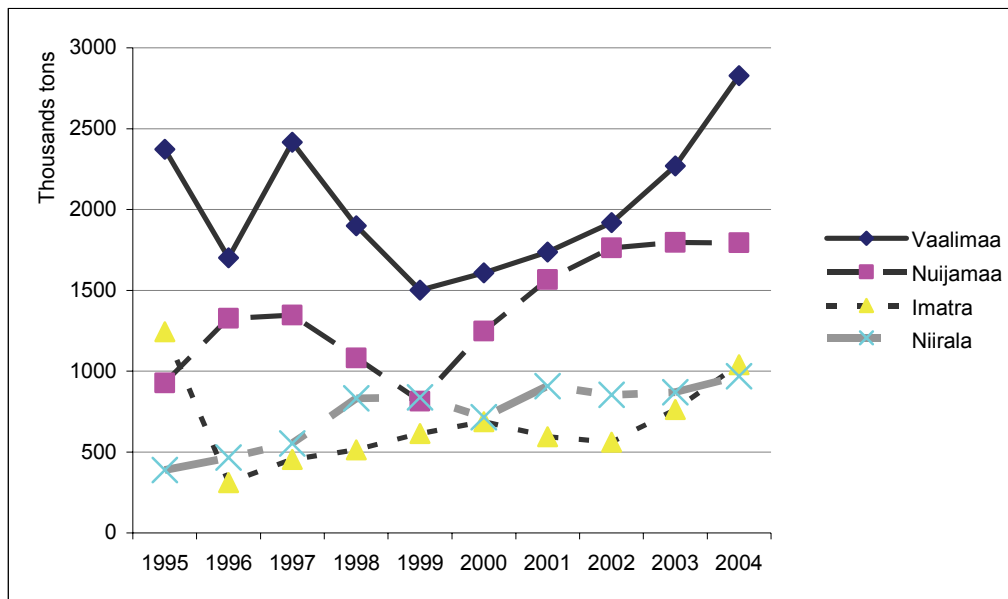


Figure A.2 Total road traffic (trade + transit) between Finland and Russia by border stations during 1995-2004 (Gröhn 2005a)

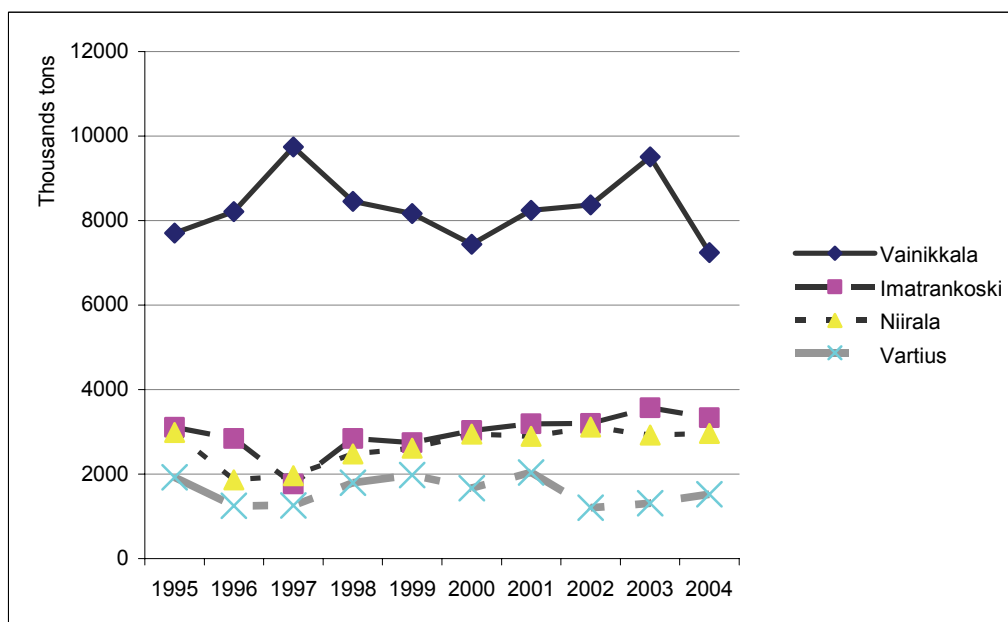


Figure A.3 Total rail traffic (trade + transit) between Finland and Russia by border stations during 1995-2004 (Gröhn 2005a)

Table A.1 Volumes of Transit Traffic in Border Stations and Ports between 1995 and 2004 in tons (Gröhn 2005a)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Eastbound border total	796963	1203895	1848106	1378648	895959	1181843	1402330	1663700	2126857	2490231
Vaalimaa	678809	831039	1412825	1001612	700001	828821	882867	908146	1285802	1596616
Nuijamaa	111117	368688	426969	368326	183966	348672	509779	727901	785737	734730
Imatra	6951	1168	6579	7506	9509	2084	2586	16093	48961	154761
Niirala	86	3000	1733	1204	2483	2266	7098	11560	6357	4124
Westbound border total	3627058	2605293	2780808	2588567	2580591	2449521	3771110	3249834	2992308	2967038
Vainikkala	3246202	2378611	2729697	2316616	2367018	2210639	3158320	3221659	2971103	2428608
Vartius	16949	13225	7570	251452	207092	233615	610595	14922	1772	403211
Niirala	354813	36518	28876	11263	5882	4740	1379	9141	18620	135024
Imatrankoski	9094	176939	14665	9236	599	527	816	4112	813	195
Eastbound ports total	1000031	1296568	1662230	1391946	795028	1228189	1684437	1811425	2203085	2637854
Kotka	426110	677283	788177	597160	351407	498476	524940	595020	821851	1002537
Helsinki	335918	286218	514710	406509	202135	460113	822973	830072	803876	784372
Hamina	95380	204061	301036	272815	179931	208231	234678	217436	314909	481387
Hanko	37012	42230	51876	55594	23127	44023	71617	139184	210393	316401
Turku	105611	86776	6431	59868	38428	17346	30229	29713	52056	53157
Westbound ports total	3410835	2423189	2817129	2552733	2498773	2131761	3919725	3429355	3261143	2992492
Hamina	653737	598063	1051484	591354	690024	591870	708739	847738	1082662	1011927
Kotka	2175343	1716307	1689614	1708321	1582588	1232802	2090889	1800523	1275261	909200
Helsinki	2441	29779	24489	25068	19631	31160	593394	658489	750730	689630
Kokkola	376389	31258	17955	206482	198445	237684	489567	44550	15670	266626
Hanko	6598	6	154	4	1184	1301	139	43975	92475	63146
Turku	36397	15682	1830	7242	6901	25410	17879	22944	33737	41112
Rauma	159930	32094	31603	14262	0	11534	19118	11136	10608	10851

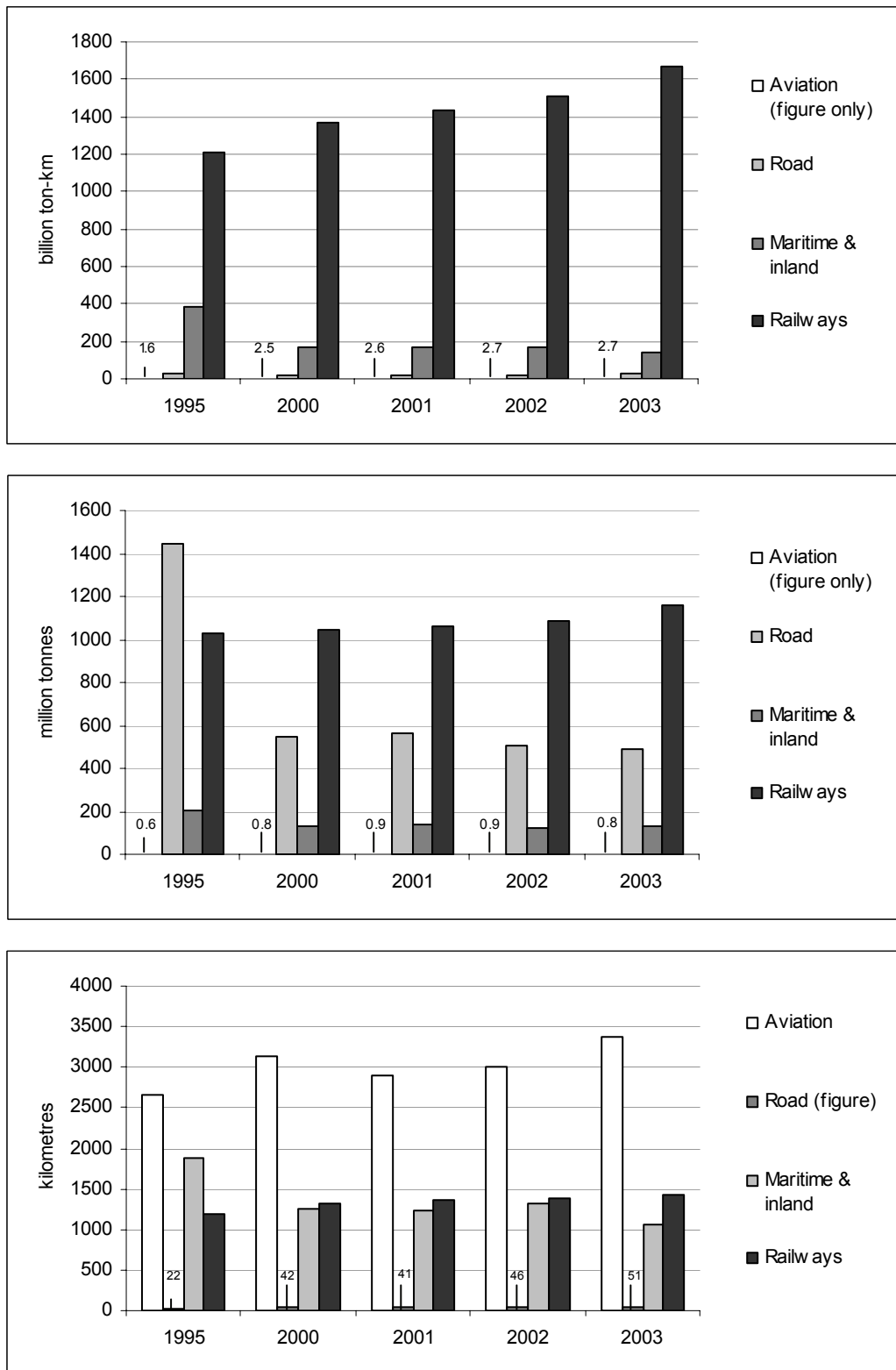


Figure A.4 Development of Different Transportation Modes in Russia by Freight Turnover (top), Transported Goods (middle) and Average Shipment Covered by One Ton (below) (Goskomstat 2004b)

Table A.2 Development Issues Mentioned in the Transportation Strategy (Ministry of Transport 2004)

Traffic mode	Development issues
Railroads	<ul style="list-style-type: none"> - Renewing the basic infrastructure - Utilizing automation of operations (e.g. controlling and safety systems) - Improving throughput in key traffic nodes - Speeding up the border crossings in railroads - Developing fast trains (160-200 km/h) and super fast trains (250-350 km/h)
Road traffic	<ul style="list-style-type: none"> - Finishing the construction of the nationwide main road network with local connections to also sparsely inhabited areas - Connecting the main road network to the main European and Asian routes - Paving the unpaved road sections - Improving throughput in key traffic nodes and routes e.g. by new motor ways - Construction of new routes passing congested areas (e.g. Moscow) and improving the entry routes to major cities - Utilizing controlling systems - Enhancing the border crossing zones (e.g. electric clearing documents) - Constructing large road terminals to serve international routes
Air traffic	<ul style="list-style-type: none"> - Developing the major airports to meet the international standards with multimodal terminals – especially in Moscow - Utilizing automation to operations (e.g. navigation, controlling and safety systems), meeting the international standards - Opening new routes, local and international - Developing the local aviation and collaboration in aviation - Enhancing the customs and passport control services in airports
Sea traffic	<ul style="list-style-type: none"> - Enhancing the port services according to the development trends, in both bulk and container traffic - Developing the safety infrastructure, especially in the north - Updating the infrastructure, e.g. utilizing new technology in atomic icebreakers - Enhancing the customs services especially in unit loads - Developing navigation systems
Inland waterways	<ul style="list-style-type: none"> - Guaranteeing at least 4 meters of draft in internationally important inland waterways - Solving the bottlenecks in the most important routes (Kotshetov, Balahna, Volga) - Upgrading the infrastructure and utilizing satellite location services