

# *Transport Infrastructure in Far Eastern Russia and the Use Thereof*

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## Summary

1. Transport demand in Far Eastern Russia and Russia as a whole, which had fallen in the 1990s, has been on the path to recovery since 2000. It has not yet returned to the level seen in 1990, but if growth continues in the future, it is possible that inadequate infrastructure, such as ports and airports, will become a problem. Moreover, infrastructure upgrades will become necessary in promoting resource development projects in the Far Eastern region. Projects are already taking shape, such as the construction of a new coal shipping port and the expansion of existing ones, the construction and augmentation of railway branch lines, and the expansion of the Amur River Bridge on the Trans-Siberian Railway to make it a double-track line.
2. Looking at transport modes, we can see that the shares accounted for by rail and pipeline transport are high in Russia as a whole, reflecting its vast terrain, but the shares of road and marine transport are comparatively high in the Far Eastern region. However, the region is lagging behind in terms of the upgrading of roads, with unpaved sections even on major roads, and the overall share of paved roads is low.
3. One characteristic of the ports in Far Eastern Russia is that they have an immense hinterland. The cargo handled by major ports not only includes products from the Far Eastern region, but also often includes steel from the Urals, aluminum from Bratsk and containers bound for Finland, in the event that the destination or origin is a considerable distance away. Consequently, ports operate in combination with long-distance rail transport and are seriously affected by rail transport charges. Conventionally, charges for cargo destined for seaports a long way away were set cheaply. However, since Russian Railways was privatized in 2003, there have been frequent price rises. One factor behind this is the financial structure under which profits from its cargo division are used to compensate for deficits in its passenger division, and a long-term national strategy is required for the rail pricing policy.
4. In Far Eastern Russia, since 2000, the ports have been under the control of the shippers of major cargoes, i.e. iron, steel and coal, rather than the public sector. Each port is giving preferential treatment to the cargo of their group companies and, in the refurbishment of the ports and the upgrading of their capacity, there is a tendency to prioritize the products handled by the group to which that company belongs. Ports are primarily social capital with a strong public nature, so a national strategy is also required for policies concerning ports.
5. The international combined multimodal transport system which links East Asia with Europe, European Russia and Central Asia via ports in Far Eastern Russia by means of marine transport and the Trans-Siberian Railway has been used since the 1970s. However, in response to successive price increases by Russian Railways and the effect of the improved competitiveness of rival routes, there has been a steep decline in cargo destined for or originating in Japan. Furthermore, as a result of a significant increase in charges for transit cargo bound for Finland in January 2006, there has been a considerable impact on transit cargo destined for or originating in the ROK and China. It is necessary for Russian Railways to gain a thorough understanding of trends concerning competing routes and strive to maintain and enhance economic competitiveness.

The objectives of this paper are to provide an overview of the current status and usage situation with regard to transport infrastructure in Far Eastern Russia, which is the closest part of Russia to Japan and with which Japan has a strong economic relationship, and to examine issues relating to the development of Far Eastern Russia and Northeast Asia as a whole.

## 1. General Characteristics

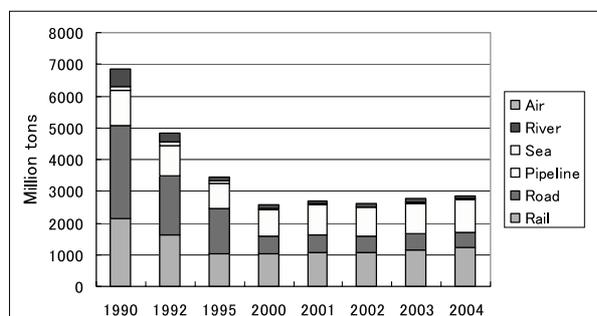
Since the collapse of the Soviet Union, cargo transport in Russia over the past 15 years has experienced a rapid contraction followed by a sluggish recovery, commensurate with developments in the economy as a whole. The volume of cargo transport in Russia as a whole fell considerably

between 1990 and 1995. In 1998, beset by a financial crisis, the macroeconomy slowed down again and cargo transport also faltered. However, transport indicators took an upward turn from 2000, proportionate to the economic recovery seen under the Putin administration, and they are still on the rise, albeit slowly. Taking 1990 as 100, tonnage carried recovered from 37.3 in 2000 to 41.9 in 2004. On a ton-km basis, the recovery was more striking, rising from 59.2 in 2000 to 74.2 in 2004, from which it can be inferred that long-distance transport is growing steadily.

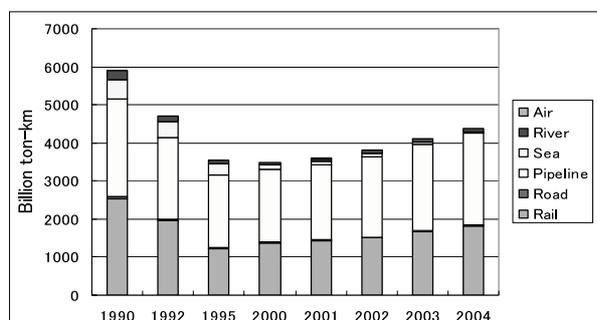
With regard to transport modes, reflecting its vast terrain, the share accounted for by railways and pipelines in Russia as a whole is high, while the share of marine transport is low, due in part to the limited number of ice-

free ports. Road transport is high on a tonnage basis, but on a ton-km basis it is extremely low. This shows that trucks specialize in transport over short distances (Figures 1 & 2).

**Figure 1 Volume of Cargo Transport by Mode of Public Transport in Russia (1 million tons)**



**Figure 2 Volume of Cargo Transport by Mode of Public Transport in Russia (1 billion ton-km)**



Source (Figures 1 & 2): Russian Transport Statistical Yearbook 2005, Russian Federal State Statistics Service

If we compare the situation in Far Eastern Russia with that in Russia as a whole, we can see that there are marked differences. Firstly, there are few pipelines in the Far Eastern region<sup>1</sup>. The share of railways on a tonnage basis is lower than the national figure, but on a ton-km basis it is actually extremely high. This demonstrates that, in the Far Eastern region, while long-distance transport using the Trans-Siberian Railway and the BAM Railway is flourishing, short-distance cargo transport mainly relies on road transport. In fact, the share of road transport in the Far Eastern region is far higher than the national average on a tonnage basis. Moreover, in the Far Eastern region, which is adjacent to the sea and has major ports, the share of marine transport is high compared with the figure for the country as a whole (Table 1).

## 2. Ports

The primary characteristic of ports in Far Eastern Russia is that they have an immense hinterland. More so than products from the Far Eastern region, the cargo handled by major ports is mainly cargo originating in or destined for distant locations, such as coal from Western

**Table 1 Share of Cargo Transport by Mode of Public Transport (2003)**

	Tonnage Basis (%)		Ton-km Basis (%)	
	Russia	Far Eastern region	Russia	Far Eastern region
Rail	42.2	26.5	40.6	80.4
Road	17.8	61.8	0.6	1.5
Pipeline	35.4	1.6	55.4	1.1
Sea	0.9	7.1	1.6	13.9
River	3.8	3.0	1.7	3.0
Air	0.0	0.0	0.0	0.2

Source: Russian Transport Statistical Yearbook, Russian Federal State Statistics Service

Siberia, steel from the Urals, aluminum from Bratsk and containers bound for Finland. Consequently, ports operate in combination with long-distance rail transport and are affected by rail transport charges. According to the rail tariff published by Russian Railways, in the case of export cargo, rail charges per unit distance differ considerably in the case of cargo shipped to seaports and that shipped to overland borders, with transport to seaports working out much cheaper<sup>2</sup>. Thanks to such preferential charges, ports in the Far Eastern region have been able to handle export cargo from such distant areas as the Urals and Western Siberia. In the same way, in the case of container cargo landed in the Far East, transit charges for cargo bound for Finland have been set much cheaper than those for bilateral (domestic) cargo destined for Moscow. Accordingly, containers from the ROK bound for Moscow take a circuitous route: they are first transported to Finland as transit cargo and then, after being stored in bonded warehouses near the Finnish border, are delivered to Moscow, their final delivery destination. Such convoluted tariff setting is believed to result from the specific Soviet-era objectives of protecting seaports and obtaining foreign currency by handling transit cargo. However, when Russian Railways was privatized in 2003, the focus began to shift to earning profits by route and moves to amend rail transport charges, setting them at more rational levels, began to be seen; those working in the port sector have a heightened sensitivity to such trends. If rail cargo charges were set purely in proportion to distance, transport costs from the Urals or Western Siberia to Far Eastern ports would become comparatively expensive and it is likely that ports on the Baltic Sea or Black Sea would be used, depending on the destination of the export cargo.

Another characteristic is the fact that, since 2000, the ports have been under the control of the shippers of major cargoes, i.e. iron, steel and coal, rather than the public sector<sup>3</sup>. Naturally, each port is giving preferential treatment to the cargo of their group companies and, in the refurbishment of the ports and the upgrading of their capacity, there is a tendency to prioritize the products handled by the group to which that company belongs. Ports are primarily social capital with a strong public nature, so in most countries, including Japan, a general national policy for ports is formulated and major ports are usually

<sup>1</sup> The Sakhalin - Komsomolsk-na-Amure - Khabarovsk natural gas delivery pipeline is due to be completed in 2006.

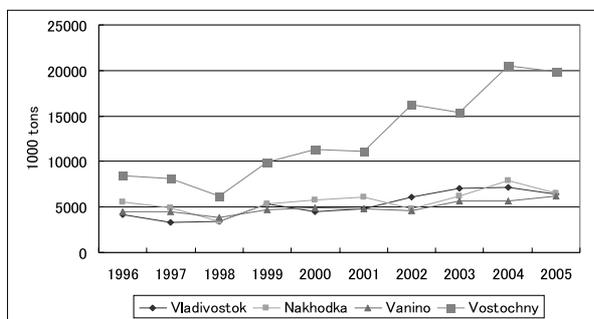
<sup>2</sup> In July 2003, the *Russian Railways Table of Cargo Transport Fares and Facility Usage Fees 10-01* was introduced.

<sup>3</sup> *Dal'niy Vostok News* No.639, 13<sup>th</sup> February 2006.

managed and operated by public institutions. For example, in the ROK, careful improvements have been carried out under an integrated national policy that designates Busan Port as a hub port for Northeast Asia and Incheon Airport as a hub airport for Northeast Asia. However, in Russia, ports were privatized separately at the same time as the dissolution of the Soviet Union and a state strategy for the integrated control of ports has yet to emerge. Moreover, the lack of progress in the Zarubino Port refurbishment project that was considered as a potential cooperative project by the governments of Japan and Russia can be attributed to the absence of a port policy on the part of the Russian government.

Next let us look at the volume of cargo handled over the last ten years by the four main ports in Far Eastern Russia (the Commercial Port of Vladivostok, Nakhodka Commercial Sea Port, Vostochny Port and Vanino Commercial Sea Port). With regard to the overall flow, the quantity of cargo fell in 1998, due to the currency crisis, but it increased again from the following year. Of the four ports, Vostochny Port is the biggest and has the highest growth rate, surpassing 20 million tons in 2004. There was a slight fall in 2005 to 19.84 million tons. The quantity of cargo handled at Vladivostok Commercial Port, Nakhodka Commercial Port and Vanino Port has been stable and almost unchanged in the long term. The quantity handled in 2005 was 6.42 million tons at Vladivostok, 6.55 million tons at Nakhodka and 6.15 million tons at Vanino (Figure 3).

**Figure 3 Volume of Cargo Handled at the Four Major Ports in Far Eastern Russia (thousand tons)**



Source: Websites of the relevant ports and the website of MorCenter-TEK. MorCenter-TEK is a company that was established by Russian ports in 2000 under an initiative on the part of the Russian Federal Ministry of Transport.

Vladivostok Port is located in the middle of the long, narrow inlet that is the Golden Horn Bay, the mouth of which is shielded by Russian Island, so it is an excellent natural harbor that does not freeze, even in winter. Vladivostok Port has a commercial port, a fishing port and a military port. The commercial port, which was privatized in 1993, has 17 berths, with the depth of water at the quays ranging from 8~13m and a total quay length of 4,200m. It has the capacity to handle 8 million tons of cargo annually,

and actually handled 7.19 million tons in 2004 and 6.42 million tons in 2005<sup>4</sup>. Looking at a breakdown of the figures for 2004, we can see that 77% of cargo was accounted for by exports, 8% by imports and 15% by domestic cargo. The main cargoes handled were metals (65%), containers (12%), oil products (5%), scrap iron (4%), and paper and pulp (4%). Metals, which are the main cargo handled, are produced at iron and steel complexes in the Urals and Western Siberia, and are mainly exported to Asia, but such commodities are affected by rail freight fares because the ports are located so far from the production areas. At the beginning of 2005, rail transport rates for cargo bound for ports were raised, while the charges for transport to overland borders were left unchanged, so it seems that some cargo was exported via seaports in Ukraine and the Baltic states, resulting in the quantity of cargo handled by the Commercial Port of Vladivostok falling by about 11% on the previous year. Industry representatives in Vladivostok placed a great deal of emphasis on this problem and in November 2005, dock workers protested against the pricing policy of Russian Railways<sup>5</sup>.

Nakhodka Port is located in the western part of Nakhodka Bay and is a good natural harbor located on an inlet surrounded by a peninsula. The depth of the shipping lane is 13m and it does not freeze, even in the winter, so it is possible to use the quays all year round. Nakhodka Port has a commercial port and a fishing port. The commercial port has 21 berths and a total quay length of 3,560m. The annual cargo handling capacity is 10 million tons and it handled 7.95 million tons in 2004 and 6.55 million tons in 2005. Looking at a breakdown of the figures for 2004, we can see that exports accounted for 98% and imports for 2%. The main commodities handled were metals (71%), timber (15%) and coal (10%). Similarly to Vladivostok Port, iron and steel produced in the Urals and Western Siberia are the main cargoes, so the port is directly affected by the pricing policy of Russian Railways and, as a result of the increase in charges for transporting cargo to ports, the quantity of cargo handled fell by about 18% on the previous year in 2005.

Vostochny Port is located in the eastern part of Nakhodka Bay, in Vrangal Bay, and is the youngest of Russia's large-scale ports. It is an ice-free port that hardly ever freezes in winter. It was built in the 1970s with Japanese cooperation, as part of a Soviet-Japanese economic cooperation project. It has a total quay length of about 3,700m and 13 wharves, both large and small, including a coal wharf, a container wharf and a general cargo wharf, and is operated by six companies, including JSC Vostochny Port<sup>6</sup>. The quantity of cargo handled in 2004 was 20.47 million tons, falling slightly to 19.84 million tons in 2005. In 2003, the main cargoes handled were coal (77%) and containers (12%). About 5% of the total volume handled is accounted for by domestic trade,

<sup>4</sup> Figures for the amount of cargo handled at each port are taken from the website of MorCenter-TEK, while details of the composition of cargo handled are taken from the websites of each port.

<sup>5</sup> *Dal'ny Vostok News* No.632, 19<sup>th</sup> December 2005.

<sup>6</sup> It is operated separately by JSC Vostochny Port, VSC Ltd., Vostochny International Container Service (VICS), Vostochny-Ural Terminal, Agrochemvostokexport, and Maliy Port, so it is not possible to gain an accurate overall picture.

while the remainder consists of exports and imports, with exports - mainly of coal - estimated to be predominant. Currently, Vostochny Port is Russia's largest coal shipping port, but the quantity of coal handled in 2005 (13.8 million tons) is greater than its designed capacity (12 million tons), so expansion work is due to begin soon. Containers, which are another important cargo at Vostochny Port, are shipped as cargo on the TSR (Trans-Siberian Railway) route, which links such East Asian countries as the ROK, China and Japan with European Russia, Finland and Central Asia by sea and rail. These containers are handled by VICS (Vostochny International Container Services), which was established in 1995 within the port, funded by European and American shipping companies. The container handling capacity of the VICS terminal is estimated at 400,000 TEU. With regard to the volume of containers transported on the TSR route in 2005, loaded containers totaled 186,000 TEU, representing a 2.8% decline on the previous year.

Vanino Port is a major port located in Khabarovsk Krai, facing the Tatar Strait, and is linked to Sakhalin Oblast by ferry. It freezes in midwinter, so an icebreaker is used. There are 17 berths, with a total quay length of 2,479m. The annual cargo handling capacity at Vanino Port is 14 million tons and 5.63 million tons were handled in 2004, rising to 6.15 million tons in 2005. Looking at a breakdown of the figures for 2004, exports accounted for 56%, imports for 8%, domestic cargo for 5% and ferry cargo for 31%. The main cargoes handled were timber (33%), aluminum (14%), alumina (7%) and iron and steel (5%). Alumina is imported from countries such as Australia and shipped about 3,900km along the BAM Railway to Bratsk, where it is refined into aluminum using cheap electricity from the Bratsk Dam power station, which uses hydropower from the Angara River. The aluminum is then loaded back onto the BAM Railway and shipped to Vanino Port, whence it is exported. In 2004, 820,000 tons of aluminum were exported, mainly to Japan. A railway wagon ferry operates between Vanino and Kholmsk (Sakhalin Oblast), which transported 1.76 million tons in 2004. Currently, hardly any coal is handled at Vanino Port, but a coal terminal is currently being built by Russia's largest coal company SUEK (Siberian Coal Energy Company) at Muchke Bay, located a few kilometers from Vanino Port; this facility, which will have an annual handling capacity of 12 million tons, is due to be completed at the end of 2007<sup>7</sup>.

In addition to these four major ports, there are the small ports of Posiet and Zarubino in Primorsky Krai, which are seeking new opportunities in such fields as the import of used cars and transit transport to China. Posiet Port handled just 280,000 tons of cargo in 2001, but by 2005 this figure had grown to 1.71 million tons.

There is also information that, since 2000, the quantity of cargo handled by ports in the south of Sakhalin Oblast has been increasing rapidly, due to the fast-growing energy

development projects in Sakhalin Oblast. The main ports in Sakhalin Oblast have traditionally been Kholmsk Port and Korsakov Port, but Kholmsk Western Sea Port and Prigorodnoye Jetty, which have been developed in recent years, are achieving remarkable development as ports for the import of materials for use in the construction of the LNG plant as part of the Sakhalin II project<sup>8</sup>.

### 3. Railways

The continental railway network in Far Eastern Russia consists of two trunk lines in the form of the Trans-Siberian Railway (TransSib) and the BAM Railway, running from east to west, and branch lines diverging from these trunk lines. There are three branch lines connecting the two trunk lines, as well as a branch line splitting off from the BAM Railway and running north to the Sakha Republic, a branch line running south from the Trans-Siberian Railway and linking up with the DPRK, and two branch lines towards China. In addition, there is a railway line running north-south along the length of Sakhalin Island. With regard to rail gauge, continental Russia uses broad gauge (1520mm), while Sakhalin uses narrow gauge (1067mm). There is a plan to change the gauge of Sakhalin's railway to broad gauge, like the rest of Russia<sup>9</sup>.

Primorsky Krai, Khabarovsk Krai, Amur Oblast, Sakhalin Oblast, the Sakha Republic (Yakutia) and Evreiskaya Autonomous Oblast (EAO: also known as the Jewish Autonomous Oblast) are served by railways, while there are no railway lines through Kamchatka Oblast, Magadan Oblast and Chukotka Autonomous Okrug. The railway track in Far Eastern Russia accounts for 9.5% of Russia's total railway network, but the railway density (length of railway per unit of land area) is only about a quarter of the figure for Russia as a whole, due to the region's geographical characteristics. Railway density in Evreiskaya Autonomous Oblast, Primorsky Krai, Sakhalin Oblast and Amur Oblast is higher than the national average, but only an extremely short railway track has been laid in the vast territory of the Sakha Republic. Work to extend the existing railway there is progressing. The shares accounted for by Far Eastern Russia in the figures for total cargo handled and the total number of railway passengers in Russia as a whole are extremely low, at 4.3% and 2.4% respectively.

Looking at changes in the quantity of rail cargo in the Far Eastern region, we can see that it is stable overall, but bottomed out in 2001, increasing thereafter. Looking at the situation by area, Khabarovsk accounts for the greatest amount handled, followed by Primorsky Krai and the Sakha Republic (Table 3).

The Trans-Siberian Railway (TransSib) is Russia's main artery, linking Moscow with Vladivostok (9,289km). Of this length, about 2,300km of the eastern part is located in the Far Eastern region. The Trans-Siberian Railway

<sup>7</sup> *Dal'niy Vostok News* No.639, 13<sup>th</sup> February 2006.

<sup>8</sup> Natsuhiko Otsuka, *Research into Promoting the Use of Arctic Ocean Shipping Routes and Safe Navigation Systems for Cold Seas* Project Report, Ocean Policy Research Foundation, March 2005.

<sup>9</sup> "There is a Plan to Convert Sakhalin's Railway From Narrow to Broad Gauge by 2007" (*Dal'niy Vostok News* No.596, 28<sup>th</sup> March 2005).

**Table 2 Railways in Far Eastern Russia and Their Usage Situation (2004)**

	Total Railway Length (km)	Railway Density (km/10,000km <sup>2</sup> )	Rail Cargo Volume (million tons)	Railway Passengers (1,000 persons)
Russia	85,286	50	1,221.2	1,335,128
Far East	8,069	13	52.6	32,097
Yakutia	165	0.5	10.0	165
Primorsky	1,553	94	12.7	15,668
Khabarovsk	2,099	27	18.1	7,035
Amur	2,934	81	7.5	6,503
Sakhalin	805	92	2.6	1,257
EAO <sup>10</sup>	513	142	1.7	1,469

Source: *Russian Transport Statistical Yearbook 2005*, Russian Federal State Statistics Service

**Table 3 Volume of Cargo Handled by Public Railways (1 million tons)**

	1995	2000	2001	2002	2003	2004
Russia	1,028.0	1,046.8	1,057.5	1,083.7	1,160.9	1,221.2
Far East	44.7	42.8	42.4	45.9	50.3	52.6
Yakutia	8.0	8.4	8.3	8.6	9.3	10.0
Primorsky	13.4	11.5	10.6	10.9	11.8	12.7
Khabarovsk	8.4	13.3	13.8	16.0	17.8	18.1
Amur	9.8	5.8	6.2	6.6	7.3	7.5
Sakhalin	3.5	2.2	2.0	2.0	2.1	2.6
EAO	1.6	1.6	1.5	1.8	1.9	1.7

Source: *Russian Transport Statistical Yearbook 2005*, Russian Federal State Statistics Service

is electrified along its entire length, and is double-track all the way along, except for the bridge over the Amur River, on the outskirts of Khabarovsk. The present Amur River Bridge is a combined rail and road bridge (the lower level has a railway line, while the upper level has a road); the railway section went into service in November 1998, while the road section began to be used in November 1999. However, as it is single-track, it cannot deal with the continually increasing volume of traffic, so at present it is used in combination with the riverbed tunnel that began operating in 1942, but the condition of this tunnel is deteriorating in proportion to the increase in the volume of traffic passing through it. Consequently, plans are being formulated with the aim of completing the conversion of the Amur River Bridge to a double-track line in 2007<sup>11</sup>.

No data are published concerning the transport capacity or actual transport performance of the Trans-Siberian Railway, but industry insiders suggest that the transport capacity is around 100 million tons annually. According to a speech given in March 2006 by Vladimir Yakunin, President of Russian Railways, the Trans-Siberian Railway transported 72 million tons of cargo in 2005, with the quantity of containers transported totaling 407,000

TEU. He stated that the company wishes to increase the container transport figure to 1 million TEU in the next three to four years<sup>12</sup>.

The BAM Railway originates at Sovetskaya Gavan (Sovgavan) on the Tatar Strait, whence it runs via Vanino to Taishet (4,300km), running parallel to and 200-400km northward of the Trans-Siberian Railway. About 2,200km of the eastern part of this line is located in the Far Eastern region. Only 704km (Taishet - Lena) of the western part of the BAM Railway is double-track, with the remainder being single-track. Moreover, 1,429km (Taishet - Lena - Taksimov) of the western part is electrified, but the rest is not, with diesel locomotives being used. Consequently, the part of the railway located in the Far Eastern region is a non-electrified, single-track line.

With regard to the annual transport capacity of the BAM Railway, the capacity of the double-track, electrified western section is estimated at 18 million tons, while that of the single-track eastern section is believed to be about 9 million tons. However, the actual volume transported is much lower than capacity, estimated to be about 8 million tons in the western section and about 5.5 million tons in the eastern section.

At the same time, there are about 10 million tons of cargo on one line connecting the Trans-Siberian Railway with the BAM Railway (Bamovskaya - Tynda). This line stretches northward from Berkakit, running via Neryungri to Tommot, and is used to transport coal from the Neryungri coalfield. Work on extending this line towards Yakutsk is progressing and the stretch between Tommot and Amga (110km) is due to be completed by the end of 2006.

Russian Railways has great hopes with regard to resource development along the railway line, as this would promote the effective use of the BAM Railway, so it is concentrating on the construction of branch lines. For example, it is considering a plan to build a 320km-long branch railway line (between Ulak and Elga) in order to develop the Elga coal deposit, which is located in the southeast of the Sakha Republic and has reserves of high-quality coal<sup>13</sup>. Furthermore, there are also plans to use railways in the project aimed at constructing a pipeline from Eastern Siberia to the Pacific, a project with regard to which Japan has great expectations.

#### 4. Roads

The main federal roads in Far Eastern Russia include the Ussuri Highway (Khabarovsk - Vladivostok, 800km) and the Amur Highway (Khabarovsk - Chita, 2,500km). Running eastward from Khabarovsk are the Khabarovsk - Lidoga (160km) - Vanino (346km) Road, and the Khabarovsk - Komsomolsk-na-Amure Road (350km). In the direction of the Sakha Republic, there is a road linking Bolshoy Never - Tynda - Neryungri - Yakutsk

<sup>10</sup> Evreiskaya Autonomous Oblast

<sup>11</sup> *Dal'niy Vostok News* No.596, 28<sup>th</sup> March 2005.

<sup>12</sup> According to a speech given by Mr. Yakunin on 16<sup>th</sup> March 2006, at the International Conference on the Trans-Siberian Railway in the 21<sup>st</sup> Century, held in Vladivostok. (*Dal'niy Vostok News* No.644, 20<sup>th</sup> March 2006)

<sup>13</sup> "Reserves at the Elga Coal Deposit are Estimated at More Than 2.1 Billion Tons, Including 558 Million Tons of Coking Coal" (*Dal'niy Vostok News* No.647, 10<sup>th</sup> April 2006).

(1,177km). Running east from Yakutsk is the Kolyma Road (Yakutsk - Khandiga - Magadan, about 2,500km), while a road to the west runs via the diamond production center of Mirny, connecting Yakutsk to Udachny in the north and Lensk on the River Lena. In addition, the Vostok Highway (Khabarovsk - Nakhodka, about 700km) is under construction. Although they are classed as trunk roads, hardly any roads in the northern part of the Sakha Republic are paved; in the south as well, certain sections of roads such as the Amur Highway and the Lidoga - Vanino Road are also unpaved.

Including public highways and private roads (roads belonging to public institutions and privately owned roads), the total length of solid paved roads (including those paved with crushed stones) in the Far Eastern region (as of the end of 2004) is 43,420km, accounting for 5.9% of the total for Russia as a whole. If only public roads are taken into consideration, the figure is 33,536km, or 6.1% of the Russian total.

The density of the road network per unit of land area (km/1,000km<sup>2</sup>) in Far Eastern Russia is 5.4, lower than the figure for Russia as a whole (32.0). By area, while Primorsky Krai (43.0) and Evreiskaya Autonomous Oblast (43.0) have figures higher than the national average, the figures are low in such sparsely populated areas as the Sakha Republic (2.4), Chukotka Autonomous Okrug (0.8), Kamchatka Oblast (3.0) and Magadan Oblast (4.8).

With regard to the share of high-quality paved roads (asphalt or concrete) in the solid paved public road network, which indicates the paving rate, the average in the Far Eastern region is low at 30.1%, compared with 68.5% in Russia as a whole. By area, whereas the paving rate is high in Sakhalin Oblast (60.2%), Primorsky Krai (49.9%), Evreiskaya Autonomous Oblast (42.3%) and Khabarovsk Krai (39.9%), it is extremely low in such sparsely populated areas as Chukotka Autonomous Okrug (1.0%) and the Sakha Republic (8.3%) (Table 4).

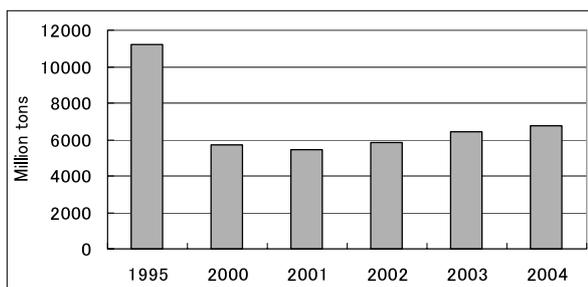
**Table 4 Road Indicators in Far Eastern Russia (as of the end of 2004)**

	Total Length of Solid Paved Roads (km)	Total Length of Solid Paved Public Roads (km)	Solid Paved Road Density (km/1,000km <sup>2</sup> )	Share of Asphalt- & Concrete-Paved Roads in the Solid Paved Public Roads Network (%)
Russia	737,588	546,353	32.0	68.5
Far East	43,420	33,536	5.4	31.1
Yakutia	9,913	7,528	2.4	8.3
Primorsky	8,806	7,090	43.0	49.9
Khabarovsk	8,101	4,994	6.3	39.9
Amur	9,162	7,263	19.0	29.2
Kamchatka	1,570	1,425	3.0	20.8
Magadan	2,400	2,212	4.8	14.5
Sakhalin	1,175	892	10.2	60.2
EAO	1,682	1,542	43.0	42.3
Chukotka	610	591	0.8	1.0

Source: *Russian Transport Statistical Yearbook 2005*, Russian Federal State Statistics Service

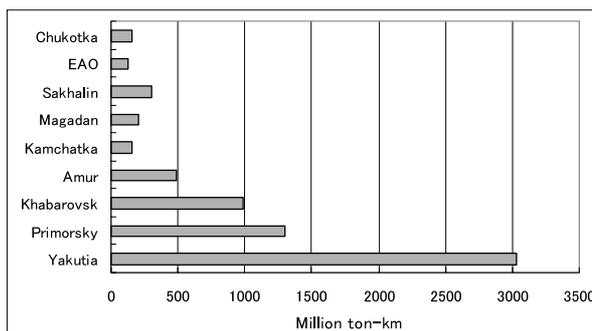
The volume of cargo transported by road is on the path to recovery, having bottomed out in 2001 (Figure 4). By area, the Sakha Republic had the highest share of road transport (on a ton-km basis) in Far Eastern Russia, accounting for 45% (2004) of the total for the region as a whole. This indicates that resources and heavy machinery have to be transported by truck or river, as there is hardly any railway provision in the Sakha Republic, as mentioned above. Primorsky Krai and Khabarovsk Krai account for the next highest shares (Figure 5).

**Figure 4 Changes in the Quantity of Cargo Transported by Road (1 million ton-km)**



Source: *Russian Transport Statistical Yearbook*, Russian Federal State Statistics Service

**Figure 5 Quantity of Cargo Transported by Road in Areas in the Far Eastern Region (2004, 1 million ton-km)**



Source: *Russian Transport Statistical Yearbook 2005*, Russian Federal State Statistics Service

## 5. Rivers

In Far Eastern Russia, the role of water transport using rivers cannot be ignored<sup>14</sup>.

The Amur River, which flows from its source east of Lake Baikal through the southern part of the Far Eastern region, meanders across the continent in an easterly direction and merges with tributaries from China before flowing into the Sea of Okhotsk. Khabarovsk is the hub for waterways along the Amur River, which are used for trade with Heilongjiang Province and transport to cities located on the banks of rivers, as well as for transport via the estuary across the Sea of Okhotsk and the Japan Sea to the ROK and Japan.

The mighty Lena River in the northern part of Far

<sup>14</sup> The aforementioned publication by Natsuhiko Otsuka contains detailed information about river transport in Far Eastern Russia.

Eastern Russia flows from south to north, draining into the Arctic Ocean. In the Sakha Republic, where the railway network is rudimentary, river transport focused on the Lena River plays a central role in inland transport, along with road haulage. This network, centered on the republic's capital of Yakutsk, extends to the mouth of the river at Tiksi in the north. To the west, it extends back up the Lena River via Lensk to Ust-Kut, a nodal point on the BAM Railway.

One example of the use of river transport is found in the transport of materials for the production of diamonds, which is the main industry around Mirny; materials are transported by boat from Ust-Kut and are landed at Lensk before being carried by truck to Mirny. In addition, logs are sent by river from Lensk to Yakutsk, and are then carried by truck to sawmills.

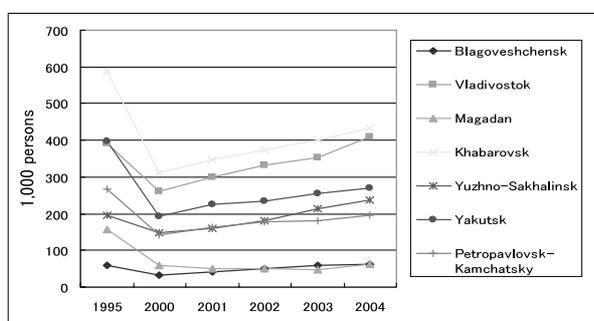
However, there are many problems, such as the fact that rivers in Far Eastern Russia are only navigable for a limited period during the summer, the fact that the river level rises constantly during the spring when the snow melts, the fact that there are frequent floods, and problems relating to infrastructure development in wilderness areas. Moreover, it has been pointed out that the depth of the water is decreasing due to the decline in transport volumes in recent years and the lack of money for maintenance and dredging.

## 6. Airports

Air transport is crucial to the movement of people in the vast territory of Far Eastern Russia. There are more than 200 airports, both large and small. Of these, 13 have concrete runways on which large aircraft can take off and land, while the remainder only have soil airstrips.

Looking at the number of passengers at major airports, we can see that the number halved during the 1990s, bottoming out in 2000, but has been on the increase since then. Similar trends have been seen in Russia as a whole, and at major airports in Moscow and St Petersburg. In the Far Eastern region, the airport with the highest number of passengers in 2004 was Khabarovsk (430,000), followed by Vladivostok (410,000), Yakutsk (270,000) and Yuzhno-Sakhalinsk (240,000) (Figure 6).

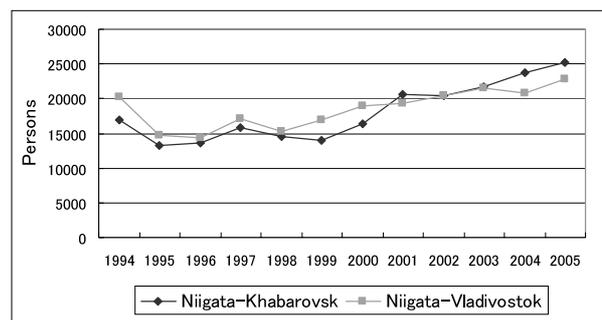
**Figure 6 Changes in the Number of Air Passengers by Airport in the Far Eastern Region (1,000 people)**



Source: *Russian Transport Statistical Yearbook 2005*, Russian Federal State Statistics Service

The number of air passengers on routes between Japan and Far Eastern Russia has also been on the increase in recent years. Looking at the number of passengers on routes to and from Niigata, we can see that the number of passengers between Niigata and Khabarovsk rose from 13,244 in 1995 to 25,153 in 2005 (+89%), while the number of passengers between Niigata and Vladivostok rose from 14,760 in 1995 to 22,771 in 2005 (+54%). The nationalities of these passengers are unclear, but it is conceivable that the number of Russian tourists coming to Japan is increasing, reflecting the healthy state of the economy (Figure 7).

**Figure 7 Changes in the Number of Air Passengers**



Source: Port and Airport Bureau, Niigata Prefectural Government

## 7. International Combined Multimodal Transport: Use of the Trans-Siberian Railway and Marine Transport

The international inter-modal transportation system that uses the Trans-Siberian Railway and marine transport to link East Asia (mainly the ROK, China and Japan) with Russia, Europe (mainly Finland) and Central Asia via ports in Far Eastern Russia (mainly Vostochny) is the TSR route.

Currently, three types of rail route are used, bound for three different western destinations, and there are routes that compete with each of these.

- i) **Europe Transit (East Asia - Finland):** It takes 11 days for block trains to reach the Finnish border from Vostochny. It has the advantage that it is faster than the competing Deep Sea route. Most of the cargo is ultimately destined for Russia, but is temporarily stored in bonded warehouses in Finland. At present, it lacks competitiveness in the case of transport to European countries other than Finland<sup>15</sup>.
- ii) **Central Asia (East Asia - Kazakhstan/Uzbekistan):** This bifurcates from the TSR at Novosibirsk, heading southwards. It takes 9 days for block trains to reach Almaty from Vostochny. The competing route is the Trans-China Railway (TCR).
- iii) **Russia Domestic (East Asia - various parts of Russia):** In the case of transport to European Russia, the competitors are the Deep Sea route and road haulage.

<sup>15</sup> In the case of transport to Europe, it is necessary to transship cargo at a border station because of the difference in gauge, which means that the route loses competitiveness in terms of both cost and time.

In the past, there was also transit transport to such destinations as Afghanistan, Iran and Western Europe, but this has now ceased, due to such factors as economic competitiveness and the fact that there has been progress in developing alternative routes.

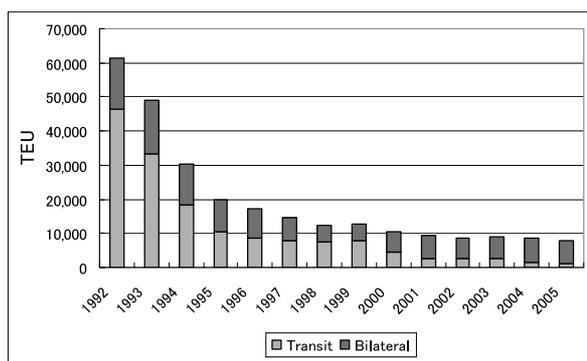
Of the aforementioned three routes, i) is classed as transit transport, as it merely passes through Russia, while ii) and iii) are classed as bilateral (export and import) transport. The countries of Central Asia are former Soviet-bloc states, so this is still classed as bilateral transport today, following the tradition of Soviet times. The rail transport charges applied in the cases of transit and bilateral transport differ: transit is considerably cheaper. Moreover, transit cargo is subject to simpler customs inspection procedures at the port that it passes through in Far Eastern Russia. This is a remnant of the Soviet-era policy of prioritizing the acquisition of transit cargo in order to secure foreign currency.

As of April 2006, seven companies were involved in the marine transport network linking East Asia with Vostochny Port, operating 30 ships every month. Of these, 24 ships a month call at Busan, which is the real hub port for this region. The number of ships calling at ports in China is increasing, mainly those bound for Shanghai, with 16 ships a month sailing on four shipping routes. Reflecting the fact that there is little cargo on the route, there are only two sailings a month on the route between Japanese ports and Vostochny.

The 1970s and 1980s were the heyday of transit transport linking Japan with such destinations as Europe and Iran using the TSR. Using low prices as a weapon, transit cargo bound for or originating in Japan reached its peak of more than 110,000 TEU in 1983. However, at the end of the 1980s, the quantity of cargo began to decline due to the development of alternative routes and weakening price competitiveness. Furthermore, in the early 1990s, as the Soviet Union collapsed and the country began the process of transition towards a market economy, the TSR route was beset by a period of disruption and stagnation. Due to the loss of price competitiveness and problems relating to the image of the route, the slump in cargo originating in or destined for Japan has continued into the 21<sup>st</sup> century (Figure 8).

From the end of the 1990s, the ROK emerged as a major exporter to Russia, in such fields as household electrical appliances. After the chaos of the 1990s in Russia, from 2000 the country became more stable, both politically and economically, with the emergence of President Putin, and railway operations also normalized, enabling the TSR to regain the trust of former users. Russia's proactive policies also helped and the TSR has come to be highly praised by shippers as a faster route than the Deep Sea route<sup>16</sup>. Moreover, soaring oil prices built up momentum in the Russian economy and robust export

**Figure 8 Changes in the Quantity of TSR Cargo Originating in or Bound for Japan (TEU)**



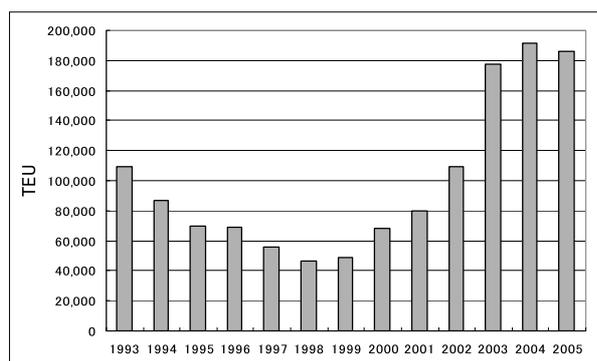
Source: Mitsui O.S.K. Lines, Ltd.

demand for household electrical appliances and consumer goods generated fresh transport demand. In particular, the Russian market is dominated by household electrical appliances made in the ROK and consumer goods from China. Furthermore, the investment environment within Russia is improving and direct investment by companies from the ROK is intensifying. For example, Hyundai Motor Company of the ROK has begun to produce cars in Taganrog, on the Black Sea coast, in Southern Russia, and some parts are sent to this factory via the TSR route. At the same time, reflecting the worldwide boom, Deep Sea route tariffs shot up between 2003 and 2005. Aided by this, the volume of cargo handled on the TSR continued to increase steadily until 2004.

However, there are signs that the tide is now turning. Looking at the number of containers handled at Vostochny Port in 2005, we can see that there was a decrease of about 2.8% on the previous year to about 186,000 TEU (Figure 9). By direction, there is still an imbalance, with westbound cargo accounting for 79.4% and eastbound for 20.6%, and empty containers are being transported in the eastbound direction. By route, bilateral cargo accounted for 70.1% of the total, while transit (to Finland) accounted for the remaining 29.9%. The share of transit cargo is declining rapidly. In 2005, westbound transit cargo fell by 32.9% on the previous year. Factors behind this include the fact that some cargo switched to the Deep Sea route because of delays that occurred at Vostochny Port in the spring of 2005, due to a lack of wagons, and the fact that Deep Sea route fares have been demonstrating a downward tendency since the latter half of 2005. By country of origin or destination in East Asia, there has been no change in the fact that cargo from the ROK predominates, with the ROK accounting for 64.9%, China for 30.9% and Japan for 4.2%. However, the figure for ROK cargo includes cargo to/from China and Japan that is transhipped at Busan, so evidently the figure is somewhat inflated compared with the actual situation.

<sup>16</sup> Looking at a comparison of transport times to Hamina in Finland, in the case of transport from Busan, the TSR takes much less time: 18-22 days, compared with 35 days on the Deep Sea route. In the case of transport from Shanghai, the TSR takes about 26 days, compared with 35 days on the Deep Sea route. In the case of transport from Kobe, the TSR is still faster, at 24 days, compared with 35 days on the Deep Sea route.

**Figure 9 Changes in the Volume of International Container Cargo Handled at Vostochny Port (TEU)**



Source: VICS

Furthermore, in January 2006, Russian Railways announced a major rise in fares, so almost all transit cargo originating in the ROK and China and bound for Finland on the TSR route has shifted to the Deep Sea route. There are rumors that talks are taking place between the interested parties, but as of April 2006, there is no suggestion that fares will be revised. Future developments will be the focus of attention, along with trends in the market prices of Deep Sea route fares.

Thus, the tough stance of Russian Railways with regard to tariff setting is leading to a decline in economic competitiveness. In particular, since Russian Railways was privatized in 2003, tariffs have been increased frequently, under the pretext of such charges as "convoy charges" (guard charges). Given that the management of Russian Railways is structured in such a way that the deficit in its passenger sector is covered by the surplus in the cargo sector, it is likely that it will lose the confidence of shippers if it increases tariffs too readily in the future<sup>17</sup>.

Another problem is the aforementioned chronic delays. As a result of the rapid increase in cargo volumes since 2000, a lack of bogies in the winter of 2004/5 led to freight congestion at Vostochny Port, eliminating its selling point of speed. Consequently, some cargo has apparently shifted to the Deep Sea route. The TSR suffers from an imbalance

in favor of westbound transport, so it is necessary to return empty bogies and containers in the eastbound direction to Vostochny as swiftly as possible, but shortages of bogies and containers tend to occur when there is a large volume of cargo.

Rival routes are steadily and assiduously increasing their competitiveness. The shipping companies using the Deep Sea route are striving to eliminate the lack of freight space by building many large container ships. With regard to cargo destined for Central Asia, China is modernizing its facilities and providing services focused on the supply of shipping company containers. It is necessary for Russian Railways to gain a thorough understanding of developments relating to such competing companies and strive to increase its economic competitiveness.

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<sup>17</sup> The fares paid by ordinary passengers using the passenger services of Russian Railways apparently only cover about 60% of the actual transport cost. The remainder is covered by income from cargo transport. *Dal'niy Vostok News* No.636, 23<sup>rd</sup> January 2006.