



Trans Siberian Railway: from inception to transition

Anastasia Liliopoulou¹, Michael Roe², Irma Pasukeviciute^{2*}

¹ *Export manager, Combi Trans Hellas Ltd*

² *Centre for International Shipping and Logistics, University of Plymouth Business School*

Abstract

This article presents a detailed historical overview of the existence of the largest railway in the world, which runs for 5,867 miles and connects Far East with Western Europe. Over the years it gained many names, such as Trans Siberian Land Bridge, Trans Siberian Route, Trans Siberian Line and Trans Siberian Railway but each one of the names stand for the longest rail route across the continent of Eurasia. This article provides an opportunity to look at early stages of railway's construction, its uniqueness, interesting path of development, survival of two World Wars and finally its establishment as a vital part of continent's logistics chain. Throughout the years, the Trans Siberian Railway (TSR) has been proven to have the longest history of commercial freight operation between Europe and the Far East.

Keywords: Trans Siberian Railway; Logistics.

Construction of the Trans Siberian Railway

The initial idea of a railway construction, which would open up Siberian region for development, was set out by general governor of Eastern Siberia N.N Muravyov-Amursky in 1857. In the following years, this idea inspired military engineer D. Romanof to create a project, which involved building a railway line that would ultimately connect Russia to Siberia. The idea was highly thought of however the cost of such a construction ensured no support from the Russian government. This was mainly due to the lack of funds and the insufficient number of railways which connected Russia to its mining interests (Soviet Geography, 1990). Only in 1873 when the Ural Railway Company was established to link iron and coal rich Ural mines with central Russia, the Russian government started working in earnest for the Trans-Siberian Railway. There were many suggestions from foreign entrepreneurs to fund the construction, but nonetheless the Russian government decided to use its own funds, because capitalists could have strengthened foreign influence on Siberia and the Far East of Russia whilst building the railway there and it was unacceptable at the time (Slepven, 1996).

* Corresponding author: Irma Pasukeviciute (ipasukeviciute@plymouth.ac.uk).

The first real impulse to start construction works on the new Trans Siberian Railway line was given by Tsar Alexander III in 1886 but in reality it did not come into effect until 1891 when the construction actually began from both ends, Vladivostok (East Siberia) and Chelyabinsk (West Siberia), and worked towards the centre (see figure 1).

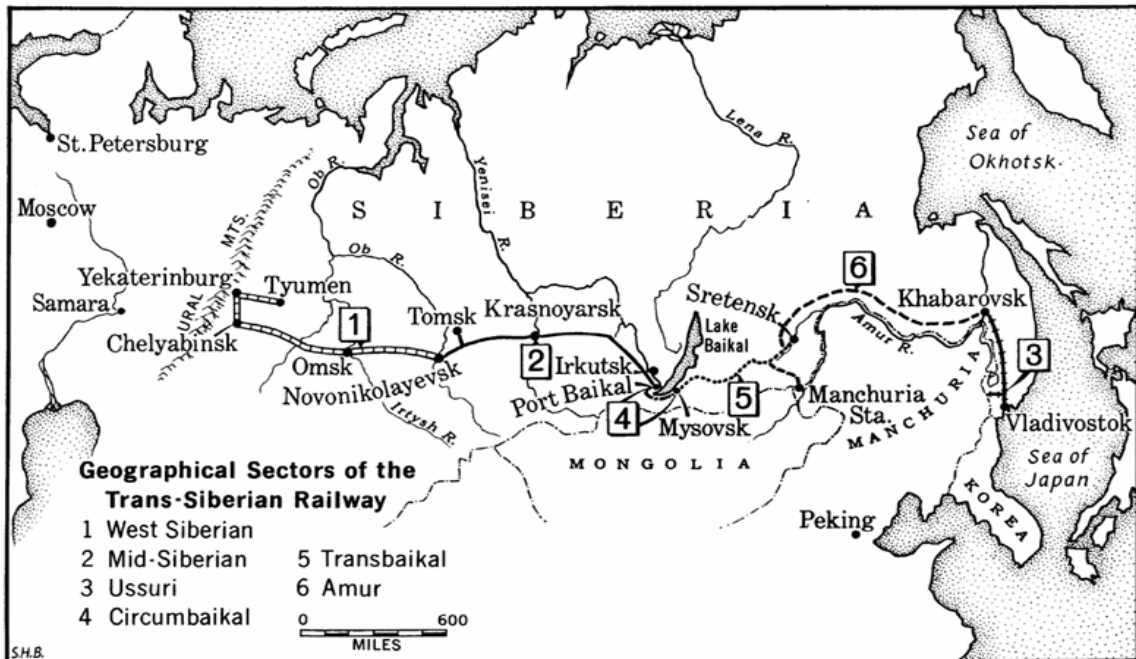


Figure 1: historical map of the Trans Siberian Railway.

Source: <http://www.transsib.ru/Map/transsib-building.gif>.

The project was built in several sections. From 1891 until 1897 a railway line connecting Vladivostok and Khabarovsk was completed because by 1880 Vladivostok had grown into a major port city, and the lack of adequate transportation links between European Russia and its Far Eastern provinces became an obvious problem.

A treaty with China in 1896 enabled the Russians to construct an 800 mile railway line through Manchuria, this way shortening the distance to Vladivostok. Therefore between 1897 and 1903 Russian Government constructed the Chinese Eastern Railway, across Manchuria, in Northern China (Soviet Geography, 1990), which connected Vladivostok with sections of the TSR in Western and Central Siberia (see figure 1). By 1904 the TSR stretched from Vladivostok across China and Siberia to the Ural Mountains (Moore, 1980). Construction continued, despite the fact that building the railroad was a hugely challenging task for the Russian Government due to the difficult terrain and extremes of temperature in Siberia. One of the main obstacles to the completion of the Trans Siberian line was the Baikal Lake, but a way around the lakeshore was completed in 1905. By 1916 the Amur River line, situated north of the Chinese border was finished together with the continuous railway line within Russian territory from Moscow across Siberia.

Tsar Alexander III started the construction of the Trans Siberian Railway with the vision of providing a reliable communication and transportation system, linking the Russian empire with Siberia and making long scale-immigration possible (Jorre, 1961). He knew that Siberia was at the mercy of strong Asiatic powers if there wasn't a reliable

communication and transportation system linking the empire with Siberia. This leads to a conclusion that the TSR was initially built to protect the Siberian borders and hence “the replacement of the normal 4ft gauge by the unusual 5ft gauge was adopted, whose adoption aimed at isolating conservative Russia from progressive Europe as well as at hindering possible invasions” (Jorre, 1961, p189).

America was one of the first countries to express their enthusiasm for the longest railway line in the world and its advantages to be gained from Russia’s opening up of Siberia. The Americans believed in no doubt that “the Siberian Railway would invigorate the extensive and richly endowed territories, and create favourable conditions for American exports” (Slepnev, p37).

In the years to follow, the contracts for the equipment of the Trans Siberian Railway were given to American firms including the supply of rails, locomotives, freight-car bodies, air brakes and engines. The Siberian line not only opened a dependable route to the Pacific Ocean but was also the key to the miraculous natural wealth (oil and coal) of Siberia and the Far East (Karbonski, 1992).

TSR during the world wars

From the earliest days of their introduction railways have been regarded as offering the most efficient means for meeting the special needs of military transport in time of war and it is a fact, that Russia was one of the countries with a long history of wars. Therefore, originally, the Trans Siberian Railway was used during the First World War by the Allied powers to transport troops and supplies across the vast territory. In 1914 the war with Germany worn out the Russian Empire and the Trans Siberian Railway had almost ceased to function, in a critical period where German submarines had effectively precluded shipment of arms to Russia through the Baltic. As a result military supplies were purchased from the US and shipped to Vladivostok awaiting movement via TSR. The reorganization of the Trans Siberian Railway meant “access to massive stockpiles of munitions, food fuel, coal and other war supplies that the Allied shipping had stockpiled in the ports of both Archangel and Vladivostok” (Giffin, 1998) for the Allied Russian armies in Europe.

After the government of Tsar Nicolas fell in 1917, the new pro-western Provisional Government needed a substantial amount of money to purchase more supplies (Gaddis, 1990). Later that year they turned to the American Government for help in order to maintain functionality of the Trans Siberian Railway (Jacqueline, 1969). Three hundred men from American railway companies were selected to form the Russian Railway Service Corps (RRSC) (Johnson, 1923). The American team inspected the railway and reached the conclusion that “Trans Siberian Railway was the only usable railway into Russia from the outside world” (Culloton, 2002). The RRSC established 14 station units distributed along the Chinese Eastern Trans Siberian Railroad to Omsk (Graves, 1931). Their duty was to inspect the Trans Siberian line and advise the Russian government on how to improve the railway and increase its carrying capacity (Johnson, 1923).

Siberia became a very important strategic area during the First World War and thus in May 1918 United States intervened into the Russian war, with the aim to remove the Czech Legion from Siberia, salvage a front against the Germans, prevent Germans from seizing Allied supplies and keep a watch upon Japanese who were also intervening in Siberia (Unterberger-Miller, 1989). The TSR suffered severe damages as a result of the

war – over one hundred bridges, numerous depots, water towers, and other railway facilities were in need of considerable repairs or even rebuilding (Gaddis, 1990).

The poor condition of the railway, tension caused by the Allied Intervention, the civil war and the Czech control over a large portion of the railway, led to the Inter-Allied Railway Agreement (Kennan, 1967). The US Government developed a plan for the creation of a commission that would operate the railway until the Russians were able to resume control. Therefore, in 1919 the Inter-Allied Railway Committee (IARC) was established. It included representatives from governments of the following countries: Russia, United States, Japan, China, Great Britain, France, Italy and Czechoslovakia. Its first task was to divide the railway into sections to be guarded by American, Chinese and Japanese powers.

IARC was the policy-making committee, and therefore a number of specialized agencies were established in order to utilize its decisions. The most important agency was the Technical Board, which was responsible for the technical and economic management of the Trans Siberian line.

Between 1919 and 1922 the Technical Board contributed substantially to the improvement in both railway's physical condition and its efficiency. Under the Board's direction over one hundred bridges were repaired or rebuilt, entrances to major tunnels blocked by explosives were cleared, and depots that had been destroyed were replaced (Giffin, 1998). Furthermore, locomotives and cars were repaired quickly and the freight tonnage was increased through the use of daily reports on train movements and the heavier loading of freight cars.

In 1922 the Allied troops evacuated Siberia and the Inter-Allied Railway Technical Board was dissolved. During its existence the Board achieved a number of goals; they managed to re-organize, revitalize, and co-ordinate operations of the Trans Siberian Railway (Giffin, 1998).

In the years to follow Soviet Government realized that Trans Siberian Railway provided a major logistics and communication line and therefore, since 1936 TSR was used for the movement of freight with the ultimate aim of earning hard currency (Helmer, 1999). Transit via the Trans Siberian Railway was favoured by customers, if compared to the deep sea route, due to the fact that goods of origin in transit through the USSR were not charged export and import duties. In addition to that, TSR route was also about 4,375 miles shorter than the route by sea via the Suez Canal from Far East to Europe (Soviet Shipping Journal, 1982).

During the Second World War TSR was mainly used for the movement of military cargoes delivered from the United States. The end of the war brought two major changes in terms of the historical development of the TSR. Firstly, the Trans-Manchurian line, connecting Vladivostok and Siberia, came under the Chinese control and was renamed as Chand-Chu'nn Railway (Mellor, 1975) and secondly, Eastern and Central European countries were taken under Soviet control, as agreed by the West at the Yalta Conference in 1945 (Karbonski, 1992).

TSR under the Soviet Union rule

This section provides short overview of trade principles in the Soviet Union (SU), its economic development and the role of the Trans Siberian Railway in that context.

Soviet foreign trade was dominated by three principles: (1) the trading partners had to be neighbouring communist countries or the developing third world countries to which the Soviet Union has given aid involving trade credits, (2) sale of diamonds, gold, furs etc., was carried out to acquire foreign exchange and (3) the acquisition of required raw materials and essential consumer imports had to be conducted on the most favourable terms (Jain, 1993).

At that time, the emphasis towards industrialisation, favoured the development of rail networks at the expense of other modes (Cullinane and Toy, 1998). Rail transport flourished in the middle of 1960's mainly due to the growth in the agricultural and industrial sectors and more particularly to its geographical position, serving even the vast areas of Siberia (Mathieson, 1975).

Despite the fact that it contradicted the main trade principles of the Soviet Union, in the years to follow trade with West Europe flourished. The introduction of containerization in the world market benefited both the shipping and railway sector in the Soviet bloc due to the fact that it led to the co-operation and co-ordination of these two sectors and provided through combined transport, the fastest and cheapest route from Far East to Western Europe and vice versa (Slepven, 1996). More specifically, in 1967 the progress of containerization and intermodal transport helped the Trans Siberian Railway to gain value as the shortest and cheapest alternative route compared to the deep-sea route from Europe to the Far East (Soviet Shipping Journal, 1982).

In the late 1960's experimental shipments between Japan and Europe using the Trans Siberian Railway were conducted (Zheleznodorozhnyy Transport, 1975). In 1971 a formal agreement was signed between the Soviet agency, Soyuzvneshtans, and the Japanese and European freight forwarding agents for the operation of the Trans Siberian container route and the creation of a modern system of intermodal container shipping known as the Trans Siberian Container Service (TSCS) (Miller, 1978). The first recipients of licenses to operate on the TSR were Y.S Van Gend and Loos, and C.T.I (JEURO)/ M.A.T. Transport.

According to this agreement the Soviet agency was responsible for most of the facilities of the intermodal service. Furthermore, the agreement provided that the containerized cargo heading to Western Europe would be moved using Japanese and Soviet vessels from Japan to the Russian port of Nakhoda (U.S News and World Report, 1975). Once the containers reached Nakhoda they would be loaded on flatcars and move across TSR to Moscow. From there the containers would be routed to the container terminals on the Baltic Sea coast in Tallinn (Estonia) and Riga (Latvia). There the containers would be transferred to ships heading to the country of final destination.

The co-operation and co-ordination among the countries of the self-sufficient communistic Soviet Union was vital for the TSR's success to follow. The block trains which were used to carry the containers were built at the ports of Leningrad, Tallinn and Vostochny and at the rail station at Brest (Belarus). Moreover, the USSR focused on transforming its Baltic ports from naval bases to water gateways for containers in transit. The port of Leningrad was the first of the Soviet ports to develop as a container port providing all kinds of container facilities including repairs to damaged containers and equipment (Queiroz, 2001).

In addition, Soviet ship owners established four companies to serve the Western European market and maintain a network of TSCS liner services. These were: the Baltic Shipping Company, the Estonian Shipping Company, the Latvian Shipping Company and the Azov Shipping Company.

The Baltic Shipping Company was based in Leningrad operating a fleet of container vessels and Ro-Ro ships. The Company was providing weekly services to/from Tilbury, Hull in the United Kingdom, Antwerp in Belgium, Rotterdam in The Netherlands, Hamburg and Bremen in Western Germany (Lukov, 2000).

Tallinn was the most important transshipment port for the TSCS due to its geographical location, close to the Scandinavian countries. The Estonian Shipping Company was operating frequent services to ports in Stockholm in Sweden, Oslo and Drammen in Norway, and Aarhus and Copenhagen in Denmark (Zurek, 2001).

The Latvia Shipping Company was based in Riga. The Company was providing regular container services to Dublin in Ireland, Ellesmere, Rostok and Le Havre in France.

The Azov Shipping Company was situated in the port of Zhdanov. This Company was covering all the Mediterranean countries. The services were operated from/to Valencia, Barcelona, Ravenna, Savona, Venice, Rijeka, Piraeus, Istanbul, and Alexandria. All four Companies are closely co-operating with the TSCS by providing an extensive sea network for containers in transit from Far East to Western Europe and vice versa.

In the early 1970's, the joint efforts of the Soviet and foreign parties, involved in the improvement of the Trans Siberian Container Service, helped the Trans Siberian Railway to win popularity and confidence with Japanese and Western European transport communities (Helmer, 1999). By 1979 the Trans Siberian Railway had won more than 20% of Japan's westbound export cargo (Lloyd's Shipping Economist, 1979). Moreover, the improvement in political relations between the USA and Soviet Union in 1980 lead shippers to view the Trans Siberian Railway more positively (Lloyd's Shipping Economist, 1980).

In July 1971 the Council for Mutual Economic Assistance (CMEA), which was a multilateral economic alliance responsible for promoting the economic development of the countries that were under the Soviet rule, adopted a plan for complex Socialist economic integration, which led to more joint projects and information exchange between members (Jorre, 1961). The plan included the exchange of goods among communist countries frequently by bilateral negotiations. However, as mentioned before, trade drifted outside the bloc countries, mainly to the third world countries for imports of raw materials against capital goods or towards a varied trade with Western European countries (Mellor, 1975).

The lack of convertible currency in the USSR lead to further expansion of energy trade with Western Europe in order to earn hard currency (Jain, 1993). This was easily achieved because the price system in the Soviet bloc did not depend on the principles of supply and demand, but rather upon a series of state-controlled prices for all commodities (Roe, 2001). The transport sector was continually subsidized and that meant that certain sub sectors, such as shipping and railways could develop as major hard currency earners (Lavigne, 1999).

Even though this opening to the West, against the policy of self-sufficiency, was opposed in the Soviet bloc, it provided the opportunity to develop true commercial skills and experience of the free market (Soviet Shipping, 1989). The new order occurring in the Soviet bloc required new changes in order to be able to trade and benefit from the West. Therefore, the most vital change involved the establishment of a convertible currency (Bernard, 1966). That was mainly due to the fact that Eastern European countries were constrained by the lack of foreign currency, and that meant that these countries had to export first in order to be in a position to import later.

The problem of non-convertible currency was partially resolved in 1976 by introduction of a commercial rate, which was calculated as the average amount of domestic currency needed to earn a unit of foreign currency.

Further more in 1976 the port of Vostochny was developed into the terminal gate of the Trans Siberian Railway with the ultimate aim to accommodate TSCS liner services in the Far East (Bergstrant and Doganis, 1987). The Far Eastern Shipping Company allocated in the port maintained all the TSCS container services in the Far East, including Japan, Hong Kong, Philippines, and Thailand.

In the late 1970's the FIATA Congress observed that *'the organization of shipments by the Trans Siberian Containers Service was a major achievement on the part of European and Japanese forwarding agents'* (Soviet Shipping Journal, 1982). In December 1979 the V/O Soyouztransit association was formed which was the Soviet Foreign Trade Self-Supporting Corporation, the sole forwarder of transit shipments via the USSR territory (Bergstrant and Doganis, 1987). V/O Soyouztransit offered three transit routes by TSCS: TRANSRAIL, TRANSEA and TRANSCONS.

The TRANSRAIL route was providing transit for cargo moved from the Soviet border stations, Luzhaika, Brest, Chop, Ungeny, Djulfa and Kushka to ports in Japan and other countries in South – East Asia, and vice versa. V/O Soyouztransit was responsible for the receipt of containers from the European rail at the Soviet border stations and their movement by rail to destination via the ports of Vostochny and Nakhodka (Soviet Shipping Journal, 1982). The transit time of containers was approximately 25-30 days.

The TRANSEA route was providing arrangements for the transportation of containers from European ports to Soviet ports in the Baltic Sea and Black Sea, shipment by rail to the ports of Vostochny and Nakhodka and further transshipment to a vessel for delivery in its destination. The transit time on this route was between 35 and 40 days.

Finally, the TRANSCONS route was responsible for the carriage of containers by road from the Europe to Vysoko-Litovsk near Brest. Once the containers reached Brest, they were transhipped onto rail heading to the ports of Vostochny and Nakhodka. From there the containers were delivered in their destination by sea. The transit time was approximately 40-45 days.

In order to provide an efficient service on these routes, V/O Soyouztransit was closely co-operating with many Forwarding Agents, shipping carriers in Europe and Japan, the Soviet railway, and trucking association Sovtransavto (Bergstrand and Doganis, 1987).

In the years to follow, the joint efforts of the Soviet and foreign parties involved in the improvement of the Trans Siberian Container Service, Trans Siberian Railway had won popularity and confidence with Japanese and Western European transport communities (Helmer, 1999). Figure 2 indicates the movement of containers via the Trans Siberian Railway from 1980 to 1989.

At this point it should be emphasized that the actual figures for the amount of containers carried by the Trans-Siberian Container Line (TSCL) were difficult to compile accurately due to a number of reasons such as different sources, for their own reasons, providing different statistics of the amount of containers that the Trans Siberian Container Line handled since its establishment (Lloyd's Shipping Economist, 1980). In addition, the figures were, in some instances, confused by the number of different countries that transport their containers via the TSR route, making the comparison of origin/destination areas a difficult task (Lloyd's Maritime Asia, 1990). The main reasons behind these problems were the lack of co-operation between the operators involved due to competition, the lack of co-ordination among the parties involved in this

trade, and lack of organization of the TSCL. Also another reason behind the publication of different figures at the time was the strict regulations included in the old Soviet economic system. More specifically, the Soviet economic system was based on targets. If a company succeeded fulfilling the targets imposed then the company could earn more money and more security. However, if a company failed to meet the targets imposed by the Soviet Rule, then the consequences were very unpleasant. Hence, all companies during Soviet times were publishing results that showed they had met targets, even if such results did not reflect the reality.

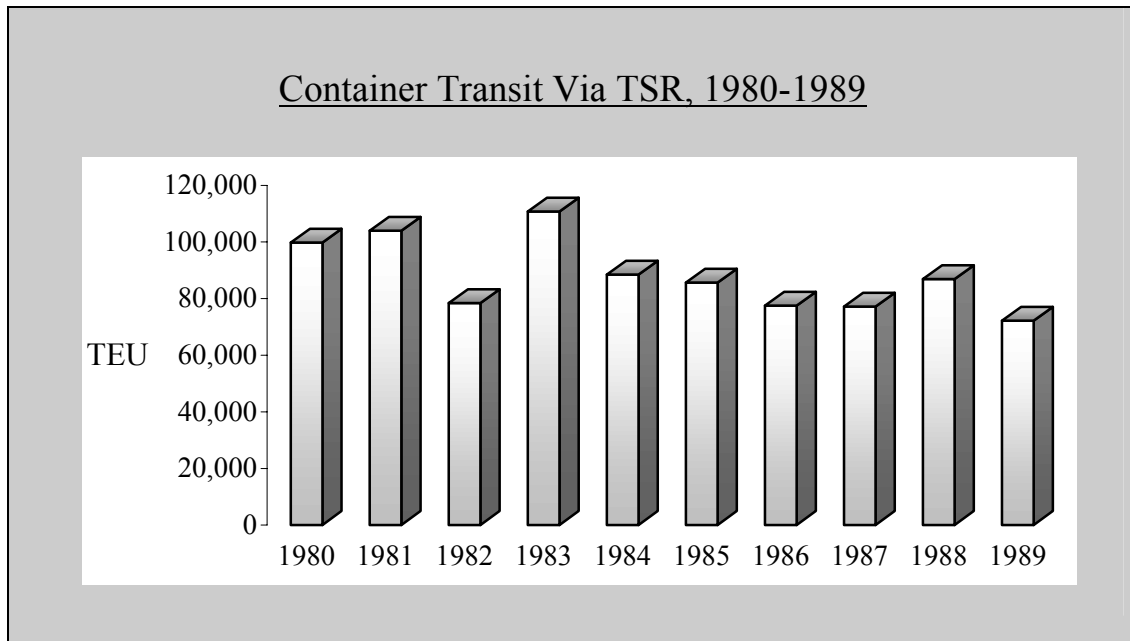


Figure 2: container transit via TSR, 1980-1989.

Source: <http://www.erina.or.jp/Forum/Forum2000/eSession1/eNagasawa.htm> and Nikolai Lukov, Secretariat of the CCTST

However, experts of the region have managed to compile a set of figures that were reliable enough to provide a general picture of the TSR route (presented in Figure 2). This was achieved partly through collating a wide range of sources and partly by comparing the trade between Europe and Japan carried by TSCL and that carried by the Far East Freight Conference (Lloyd's Shipping Economist, 1980). In terms of figures or more specifically in terms of TEU capacity, the numbers of containers transported by the TSCL between Europe and the Far East increased from 55,000 TEU in 1978 to over 100,000 TEU in 1979. However in 1980 the movement of containers from Europe to Japan and Korea via the Trans Siberian Container Line suffered a considerable decline of 10,000 TEU.

Nevertheless, as it is indicated in Figure 2, the total movement of containers via the Trans Siberian Railway had increased in the 1980's, reaching 110,683 TEU in 1983. The main reason for this sharp increase between 1980 and 1983 is mainly due to the war between Iran and Iraq that started in 1980 (Lloyd's Shipping Economist, 1981a). More specifically, the number of containers destined for Iran in 1980, increased by 400% when compared with 1979, reaching 24,000 TEU (Lloyd's Shipping Economist, 1981b). This was mainly due to both the effects of the war with Iraq, which resulted in the

closure of the Iranian ports, and the shortage of shipping space in most trades heading to Europe (Lloyd's Shipping Economist, 1981b).

From 1982 onwards the competition between sea and rail operators on the Europe/Far East route became increasingly intensive due to the announcement of the Trans Siberian Container Line's intention to reduce tariffs, which was expected to increase the container traffic going via railways rather than sea (Lloyd's Shipping Economist, 1982). The main reason behind this policy adopted by the TSCL for the reduction of tariffs had two aims: one was to increase volumes and the second one to maximize the hard currency earnings in the Soviet Union.

During the same period the competition between shipping lines on the Far East to Europe route was increasing, which resulted in the TSCL causing a major concern among shipping lines. Most of them were strongly opposing to the Soviet Union's regulation of competition between the Trans Siberian Railways and maritime routes, as well as to the subsidies provided to the TSR (Lloyd's Shipping Economist, 1981b).

In the first half of 1983 the trade to Iran increased, and so did the volumes of containers from the Far East to Iran via the Trans Siberian Railway. This resulted in shipping lines, which operated in the Arabian Gulf, having to introduce better quality services to Iran (Lloyd's Shipping Economist, 1983a). At the same time, Soyuztransit (SOTRA), the authority which operates the transit system in the TSR, was facing problems due to congestion at the Far East ports of Vostochny and Nakhodka and the inland station of Djulfa on the Iranian border. The congestion led to delays, which consequently raised a number of questions about the future capacity of the land bridge. By the end of 1983, the total volume on the Iran-bound TSR cargo was approximately 44,600 TEU (Lloyd's Shipping Economist, 1983b).

In order to keep an advantage over sea transport, Trans Siberian Railway introduced regular express block train services at the beginning of 1985 (Lloyd's Maritime Asia, 1990). Each block train had 52-55 wagons, carrying up to 110 TEU and these were dispatched to five Soviet border destinations: Leningrad (for UK/Baltic traffic), Chop (Czechoslovakia/Hungary), Brest (Poland/Germany), Djulfa (Iran) and Lujaika (Finland) within 20-21 days from Japan. This newly established service was co-ordinated by an expert non-vessel operating common carrier, Jeuro Container Transport Inc.

"In its capacity as general agent for v/o Soyuztransit (SOTRA)-the Soviet body responsible for operating the Trans-Siberian Container Service-Jeuro arranges all block trains bookings through its Yokohama office placed by fellow members of the Trans Siberian Intermodal Operators Association of Japan (TSIOAJ)" (Lloyd's Maritime Asia, 1990).

Moreover, along with the new block train system came further improvements in the TSR's operational system, including the introduction of a computer tracking system to monitor the movement of containers along the railway.

The overall movement of containers via the Trans Siberian Railway remained stable between 1980 and 1989 however after 1989 the major political differences between the Soviet Union and its East European satellites, led to a great uncertainty over its future.

The collapse of the Soviet Union in 1989 negatively influenced the development of the Trans Siberian Railway and its co-operation with foreign partners, to a large extent because all of the Baltic ports which were purposely developed in Soviet times in order to facilitate Soviet trade were located in countries, which chose to leave the Soviet Union and become independent (Cargo Systems, 2002).

Conclusion

Over the years the TSR served a number of purposes and played a significant role in the Russian as well as Soviet economy. A lot of the issues regarding the development of this railway line have been discussed within this article, however plenty more remain yet to be investigated. Since the collapse of the Soviet Union the dramatic political and economic developments in the former communist countries were closely followed by the rest of the world (Estrin, 1994). In particular the transport sector attracted a lot of interest. Western governments, companies and international organizations were eager to be kept informed, to understand, to advise, to trade, to invest and to be involved in one way or another in this region.

This renewed interest has focussed perhaps more than anything else on the potential that the TSR possesses for transporting containers to Europe from the Far East and to provide an alternative service to the ocean route and a source of income for Russia.

This historical discussion creates the base for a future article in which issues relating to the operational future of the TSR, following the collapse of the USSR will be analyzed.

References

- Bergstrant, S. and Doganis, R. (1987) *The impact of Soviet Shipping*, Allen & Unwin Publishing, London
- Bernard, P.J. (1966) *Planning in the Soviet Union*, Pergamon Press, London.
- Cargo Systems (2002) "Baltic Ports" March, p.13.
- Cullinane, K. and Toy, N. (1998) "Planned Road Network Developments in the Baltic Sea Region", *Transport Reviews*, Vol. 18, 1, pp.37-49.
- Culloton, J. (2002) "American Troops in Northern Russia and Siberia, World War I 1918-1920", <http://www.militaria.com/8th/WW1/siberia.html>.
- Estrin, S. (1994) *Privatisation in Central & Eastern Europe*, Longman Publications, London.
- Gaddis, J. L. (1990) *Russia, the Soviet Union, and the United States: An Interpretive History*, Columbia University Press, New York.
- Giffin, F. C. (1998) "Trans-Siberian Railway in the world history", June, <http://www.icc.ru/fed/transsib.html>.
- Graves, W. S. (1931) *America's Siberian Adventure, 1918-1920*, Longmans, New York.
- Helmer, J. (1999) "Moller weighs future of Russian intermodal route", *Journal of Commerce*, 2 August.
- Jacqueline, D. St. J. (1969) "John E Stevens: American Assistance to Russian and Siberian Railroads" 1917-1922, *PhD thesis*, University of Oklahoma.
- Jain, R. (1993) *Germany, The Soviet Union and Eastern Europe, 1949-1991*, Sangam Books Ltd., London.
- Johnson, B. O. (1923) "American Railway Engineers in Siberia", *The Military Engineer*, May-June, 15, 81, p.191.
- Johnson, B. O. (1923) "The Trans Siberian Railway", *The Journal of the Worcester Polytechnic Institute*, July, 180-182.
- Jorre, G. (1961) *The Soviet Union*, Longman Publications, London.
- Karbonski, A. (1992) *The Columbia History of Eastern Europe in the Twentieth Century*, Columbia University Press, New York.
- Kennan, G. F. (1967) *Soviet-American Relations, 1917-1920: The decision to Intervene*, New York.
- Lavigne, M. (1999) *The Economics of Transition*, Mac Millan Press, London.
- Lloyd's Maritime Asia (1990) "Trans Siberian Railway: Contest on the Orient Express", December.
- Lloyd's Shipping Economist (1979) "Threat from Rail Link", February, p. 13.
- Lloyd's Shipping Economist (1980) "Russians Unjustly Persecuted?", January, p. 46.
- Lloyd's Shipping Economist (1980) "Soviet Rail Link Delay", October, p. 17.
- Lloyd's Shipping Economist (1981a) "Trans Siberian Container Line", July, p. 43.
- Lloyd's Shipping Economist (1981b) "Trans Siberian Railway", April, p. 79.

- Lloyd's Shipping Economist (1982) "Struggling into Container Age", July, p. 38.
- Lloyd's Shipping Economist (1983a) "Iran Trade Starts to Recover", August, p. 31.
- Lloyd's Shipping Economist (1983b) "South Korea and North Europe Liner Trade", November, p. 64.
- Lukov, B. E. (2000) *Interview*, General Secretary of the Coordinating Council on Trans Siberian Transportation, June.
- Mathieson, R. S. (1975) *The Soviet Union*, Heinemann Educational Books, London.
- Mellor, R. (1975) *Eastern Europe: A Geography of the Comecon Countries*, Macmillan Press Ltd., London.
- Miller, E. (1978) "The Trans-Siberian Land Bridge, A new Trade Route between Japan & Europe", *Soviet Geography*, Vol. XIX, 4, pp.34-38.
- Moore, K. A. (1980) *Development of the USSR*, Greenwich Forum VI, p.138.
- Queiroz, C. (2001) "Major Trends in the Transport Sector and Impact on the Baltic States", *Trans Baltica 2001 International Conference*, Riga, Latvia.
- Roe, M. S. (2001) *Polish Shipping Under Communism*, Ashgate Ltd, London.
- Slepven, I. (1996) "The Trans Siberian Railway", *History Today*, 46, pp.134-145.
- Soviet Geography (1990) "Analysis of a Railway's Past, Present, and Future", May, Vol. XXI, No. 5.
- Soviet Shipping Journal (1982) "Trans Siberian Container Service", February, 25-27.
- Soviet Shipping (1989) "CMEA Jubilee and Prospects", January, p12.
- U.S News and World Report (1975) "A Land bridge Across Russia-How It's Working", December 15.
- Unterberger-Miller, B. (1989) *The United States, Revolutionary Russia, and the Rise of Czechoslovakia*, Chapel Hill Publishing, London.
- Zheleznodorozhnyy Transport (1975) "Automated Control of Container Transport", July, 36-37.
- Zurek, J. (2001) *The Role of Seaports in Region Development*, University of Gdansk Press, Gdansk.