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Alternative Routes Between the Far East and Europe (With Special Regard to the Foreign Trade of Hungary)

by
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Introduction

The growth of the weight of East Asia and Southeast Asia (hereinafter: the Far East) in the world economy seems unstoppable. For this macro-region, which is becoming the number one economic centre of the world, Europe is the second largest trade partner after North America. Due to its specific production culture and scarce natural resources, the procurement and t*rade sales markets of the Far East are mostly different* geographically (also by continents).

This short paper is only an examination of what are the natural, economic, political and logistical criteria of the goods transportation between the Far East, a re*gion more and more appreciated in the foreign trade of Hungary and Europe on* both traditional and newly created routes. For Hungary, a landlocked country, it does matter what routes can offer transportation, which is the most favourable from economic aspec*ts and* also the most reliable. In our paper, besides the analysis of infrastructure and goods flows in the Western Europe/EU/Far East relations, we also outline the possible directions and means of Hungary's joining the trans-Eurasian land and combined (se*a/land) routes*.

1 Generators and scales of traffic on sea and land routes

To simplify the issue, transportation between Europe and the Far East can use *two sea routes* (the hardly used one on the Arctic Ocean and the dominant south peri-Asian leading acros*s* the Suez Canal), and a total of *three trans-Eurasian railway corridors* are available for shipping.

In the time of mechanised transportation, *road vehicles have had* absolutely no or only *marginal role* until recently, as opposed to railway and sea shipping, in the transcontinental Far East–Europe transportation spanning extreme distances. The international transit routes, which are in poor condition in many places, are only used in certain sections, up to not more than a few hundred or one thousand kilometres (IRF Seidenstrassen… 2008). Air cargo transport, with an extremely slow pace of development, is negligible as yet, considering the transport volume.

In the generation of the total volume of cargo traffic, the European Union, Russia and China play a dominant role; the other non-EU member European countries have a secondary role, as do the states of the Caucasus and Central Asia. There is also a tertiary factor (by the extensions of the southern side corridor): Iran and Turkey. The faraway Indian subcontinent has a marginal significance compared to its economic performance, due to the complicated nature of joining the West–East corridor from the peninsula.

The largest sender and receiver of goods in the Far East is China; only 3.4% of its export volume reaches the European Union on the land corridors, the rest is transported on the sea *(Table 1)*.

The decline of the import needs of the European Union struck by a prolonged crisis, and the slowing down of the economic growth of China are expected to have an unfavourable impact on the development of the volume of railway cargo traffic between Europe and the Far East.

Table 1

Breakdown of cargo traffic between the EU 27 and China by transport routes: railway corridors and the sea route, 2010–2020

Corridors	To Europe				To China				Percentage change in 2010–2020, to	
	in 2010		in 2020		in 2010		in 2020			
	1,000 tons	%	1,000 tons	%	1,000 tons	%	1,000 tons	%	Europe	China
TransSib[a)]	669	1.4	7,438	8.0	419	1.4	2,239	7.5	+6.4	+6.1
TransSib–Kazakhstan	747	1.6	5,520	5.9	463	1.5	1,741	5.8	+4.3	+4.3
Central corridor	129	0.3	4,086	4.3	78	0.3	1,246	4.1	+4.0	+3.8
TRACECA	58	0.1	1,172	1.2	38	0.1	379	1.3	+1.2	+1.2
Railway total	1,603	3.4	18,215	19.5	998	3.3	5,703	18.7	+16.1	+15.4
Sea route	45,859	96.6	75,150	80.5	29,538	96.3	24,831[a)]	81.3	–16.1	–15.0
Grand total	47,462	100.0	93,366	100.0	30,536	100.0	30,534[b)]	100.0	–	–

Notes: a) – With no information whether this also involves the traffic of the TransSib–Mongolia and the TransSib–Manchuria side corridors, or is only valid for the trunk route in Russia. If so, then a considerable part of the traffic of the total TransSib system is excluded from the table. On the basis of other data it is hardly believable that the traffic of the TransSib–Kazakhstan corridor burdened by a break of gauge exceed*s* that of the TransSib route in both directions; b) – It is probably the numerical mistake of the original source which results in the impossible figures, i.e. that the volume of the total traffic is just equal in 2020 to that in 2010 and that the weight of sea shipping decreases.

Source: Calculated and constructed by the authors, on the basis of the tons featured in RETRACK (2012) Tables 91 and 92.

Taking the foreign trade of the other countries into consideration, we estimate the flow of goods between the Far East and Europe to range between 65 and 70 million tons in 2012 in the western direction and at least 40–45 million tons eastwards.

An ever larger proportion of goods are shipped in containers. *Asia has become* in the last quarter of a century the *most important actor* and region *in world trade* *as regards the volume of containers shipped on sea* (*Erdősi* 2010b). Asian ports managed only 25% of the container traffic of the world in 1980, and their share grew to 52% by 2010. This process is reflected in the development of the volume of traffic in the Far East–Europe relation:

- The traffic volume of containers *from the Far East to* the ports of *Western Europe* grew by 80% between 2000 and 2006, and reached 7.5 million TEUs by 2006. Traffic on the opposite direction (West–East) was approximately 4 million TEUs;
- The volume of goods transported by ships *from the Far East to* the ports of the *Mediterranean Sea* was 3 million TEUs in 2006, while the volume of the containers shipped in the opposite direction was 1 million TEU (RETRACK, 2012).

These figures reveal the advantage of the Far East over Europe as regards *the mass of export transportations*. This advantage is the strongest over Southern Europe that is least able to compensate with its moderate export the mass of goods imported from the Far East. The ports of the Mediterranean (including its constituent seas*)* also handle goods transport of the Carpathian Basin and the Southeast European–Alpine region, which is especially import to these areas (*Erdősi* 2005, 2008).

2 A supplementing or a substituting role?

The advantages of the peri-continental sea shipping, passing by Eurasia from the South, over the transcontinental transport routes running from East to West across the Eurasian continent can be seen in several aspects (expenses, reliability, and capacity). Despite the improvements made on the land corridors (especially the TransSib) and the shortened transport time, *sea navigation has been able to maintain a 98% share from goods transport over the last two decades*.

The transport linkage (and also semi-global logistics mega-turntable) function of Russia between Europe and the Far East is basically served by the system of trans-Eurasian railway corridors. As regards the volume of goods transported, this "land bridge" has had a modest *auxiliary* function in comparison with sea navigation so far. Nevertheless it may even have some *substituting* role in certain geographical and sub-sectoral segments of the transport market, because

- in the transportation of "weather sensitive" goods or ones sensitive to the salty sea air (*Truel* 2011), but also because
- after the rearrangement of the locations of the main Far East departures and destinations it is not the islands with no other choice than sea navigation

(Japan and Taiwan) but continental China which is the largest generator of traffic, and for China railway linkages may have a growing attraction;
- the railway companies of Russia and other countries will be able, by significant technical developments and the creation of well organised transport chains, to further decrease the duration and price of shipments and also make them so much safer that some of the transportation clients may choose railway instead of sea navigation.

The farther the point of departure and the destination of the shipment from the sea ports, the better the *chance for land transportation to have a substituting role.* For example, it is usually not economical to transport export goods produced in South China across the busy inland railway network to the TransSib or the central trans-Asian corridors and then to Europe; it is more reasonable to ship them from the nearest sea ports to the faraway destinations.

The efficiency of the elements of railways and roads are significantly influenced by ownership and organisational relations. As regards the latter, Russia and the Central Asian CIS countries have already made the first steps for reform. Although in most countries the free access to the services market has already become legally possible for other domestic and foreign companies, only a few have used this opportunity so far. In most countries, there is still a monopoly that is an obstacle to the renewal of the railway, both in technical and operational aspects (UNECE… 2012).

3 The major general problems of transportation on the land corridors

The factors influencing the efficiency of the operation of the trans-Eurasian transport corridors, their usability (and their competitiveness against sea navigation after all) include

- water routes across the landlocked seas and large lakes interrupting the continuity of land routes (Black and Caspian sea, Lake Van);
- special technical norms making the continuous transport of trains impossible (track gauges, voltages, different axial pressures) and the poor condition of infrastructure;
- border crossing and customs procedures different by border crossing stations and countries, and also various administrative solutions that often increase the time of transportation considerably (by 30–50%) (ECMT… 2004);

- unnecessary bypass routes to be constructed because of the political tensions among the countries, leading to increased route length and running time (e.g. the bypass of Armenia);
- one of the biggest challenges for all means of transport is to secure an acceptable level of safety of life and, above all, property. In this respect, some achievements have been made in the field of the protection of railway transports (by the employment of armed guards), but the situation in road transportation is much more worrying (despite the application of GPS devices), not to mention pipelines that are often damaged and drained (Transit and International… 2004).

One of the most serious difficulties of these is the *lack of interoperability on the railway corridors.* The trans-Eurasian corridors are only interoperable, as regards the technical parameters and the order of operation, in the successor states of the Soviet Union, while the networks adjoining them from Europe or China use different systems. The biggest problem resulting from the lack of interoperability is the difference in the track gauges, the overcoming/bridging of which (by reloading or the change of bogies) is extremely costly. The lack of interoperability is also seen in the differences among the lengths of the trains. The cargo trains running in Russia, the states of the Caucasus or Central Asia are one and a half times longer than in the connected European partner countries or in China. This means that the load of a train from a CIS country cannot be transported by a European train designed for the standard European tracks (Merger… 2012).

3.1 The situation and perspectives of the landlocked Central Asian countries for the use of the Eurasian transport lines

The peripheries of the former Soviet Union, mainly coming from their location/ geographical features, have many disadvantages in transport, caused by the difficulty to reach sea ports (the country is forced to use sea ports abroad at considerable extra costs, difficulties of crossing the state borders), and also by the natural endowments which make the construction and maintenance of land transport difficult or expensive (deserts, semi deserts or high mountains). In order to alleviate the problems, good partnership relations are necessary among the respective countries (China, Iran, Russia etc.), not only in the political dimension but also for effective economic/infrastructural cooperation. Some formal steps have already been taken in this field. One of the biggest challenges for the promotion of the trade among several countries along the Southern Route /TRACECA is the implementation of the harmonisation of the national customs procedures. The six countries of the CAREC, *Central Asia Regional Economic Cooperation* (Azerbaijan, Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan and

Mongolia) and China officially created the theoretical basis for the simplification of the checks and administrative activities at the border crossing stations by making a TIR agreement on international transportation and bi- and multilateral agreements on jointly made and simplified customs procedures, but the efficiency of the agreements can hardly be felt in real life (www.carecprogram.org, TIR Handbook, 2010). Despite the many bi- and multilateral agreements, the official cost of crossing the border ranges between 10.6% and 39% of the total transport expenses, while the non-official contributions (tips paid into the hands of officers) amount to 33% of the official sums on the average. These expenses also weaken the competitiveness of the landlocked countries on the world market (Transport links… 2006). In addition to the subjective factors, the impacts of the objective ones are even more unfavourable in some cases. The transport costs often reach 40% of the sales price of goods transported by lorries or trucks, which, however, is not only the consequence of the large transport distances but also of the cargo fees exceeding those of the advanced countries by 70%. A very much problematic factor in this respect is that the bulk of the export from the inland countries consists of bulk goods, raw materials that have a large physical volume for their specific value (e.g. cotton or wool), or, besides being bulky, they even have a big weight (e.g. petroleum products, ores, other mining products or in some cases cereals). For these products, the transport costs calculated for their specific weight are very high, weakening their competitiveness (Joint Study on Developing… 2008).

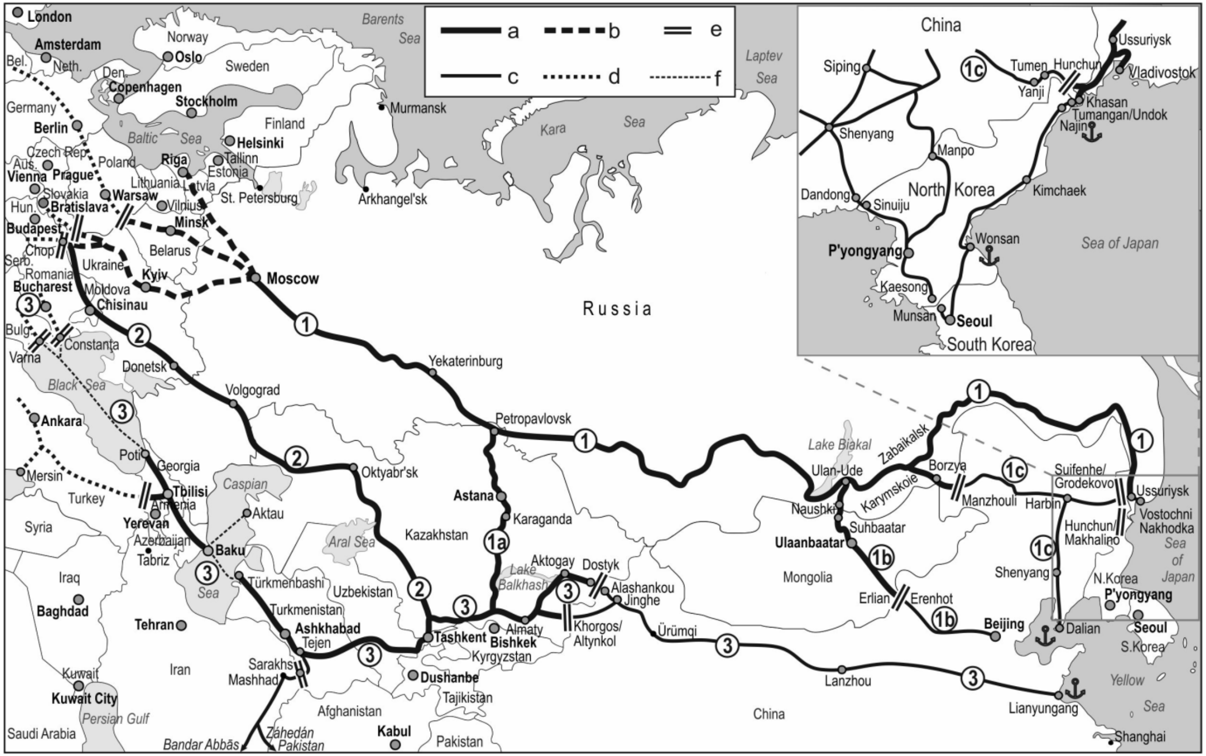
4 Function of the trans-Eurasian railway corridors, the connections they create and the features of their infrastructure

4.1 Characteristics of the infrastructure of the respective corridors

4.1.1 The TransSib corridor system

The northernmost corridor joining the Pan-European (PEN) Corridor II is the Russian *TransSib trunk corridor* (Moscow–Vladivostok), which, in the quality, practical value and capacity of infrastructure, exceeds all other corridors by far *(Figure 1, Table 2).* Its outstandingly *favourable* features from technical and transport operational aspects include that from the Polish/Belarus border right to the Sea of Japan, there is a single (wide) gauge, double track railway line, electrified in its full length, suitable for the transportation of trains that are definitely heavy (5 thousand tons) and may be longer than one kilometre. The voltages used for traction have not been standardised so far, so the locomotives must be

Figure 1: *The trans-Eurasian railway corridors*



Legend: a) – Operating wide gauge tracks; b) – Wide gauge connecting railways in Europe; c) – Operating normal gauge tracks; d) – Normal gauge connecting railways in Europe; e) – Break of gauge at a border crossing station; f) – Sea ferry lines transporting Railways; 1 – TransSib trunk line; 1a) – TransSib–Kazakhstan; 1b) – TransSib–Mongolia; 1c) – TransSib–Manchuria side line; 2 – Central corridor; 3 – TRACECA. Cutout: North Korea–China/Russia railway connections. *Source:* Calculated by the authors, on the basis of Jane's World… 2010 and several other studies.

Table 2

Main technical features of the respective trans-Asian corridors

Name of railway line	Total distance, in kilometres	From which		Number of voltages	Number of country borders	Number of breaks of gauge	Maximum axial pressure, in tons	Delivery time of traditional container block trains, in days
		electrified, in %	double track, in %					
1 TransSib trunk line								
Moscow–Yekaterinburg–Irkutsk–Khabarovsk–Vladivostok		100.0	100.0	2[a)]	–	–	25–27	10
1a TransSib–Kazakhstan side line								
Moscow–Yekaterinburg–Petropavlovsk–Dostyk/Alashankou–Lanzhou	6,755	80.7	80.7	2	2	1	25	16–18
1b TransSib–Mongolia								
Moscow–Zaudinsky–Naushki/Suhe-Bator–Ulan Bator–Zamyn-Uud/Erenhot–Beijing–Lanzhou	9,666	88.5	88.5	2	2	1	25	24–26
1c TransSib–Manchuria								
Moscow–Irkutsk–Karymskaya–Zabaykalsk/Manzhouli–Beijing–Lanzhou; Manzhouli–Harbin–Suifenhe–Grodekovo	10,693	96.7	96.7	2	1	1	25	30–32
2 Central corridor								
Aksarayskaya–Saryagash–Arys–Kandagach–Uzinki–Dostyk–Lanzhou	6,373	29.1	40.7	2	2	–	23–25	16–18
3 TRACECA								
Poti–Baku–Turkmenbashi–Turkmenabad–Khodza D.–Keles–Saryagash–Almaty–Dostyk[b)]–Lanzhou	7,168	57.4	58.3	2	4	–	25	19–22

Notes: a) – Shift of the two voltages four times on the line; b) – The southern, longer version of the Central Asian line.
Source: Calculated and constructed by the authors, from data in OSShD Rail Transport Corridor n 1, 10 2010 – http://www.ecotransit.org 2011. RETRACK study.

changed in several places even within Russia, or much more expensive, multi-voltage locomotives must be used. Its *unfavourable* features include that the larger part of its capacity is occupied by the foreign trade transport (and also personal transport) needs of large cities and mining and industrial zones touched by the railway line or located along its side-branches, so in order for the route to meet the possibly increasing transit function *(Table 1),* further capacity enlargements and modernisations will be necessary.

The TransSib trunk corridor is the *dominant transport corridor* in the Europe–Far East relation, whose backbone consists of the Brest–Vladivostok route, but whose *European side-branches* from the Baltic Region and St. Petersburg, and also from South Poland/Ukraine reach the main route west of the Volga River or in the Ural Mountains area (Trans-Asian Railway 2012).

From the south branch of the TransSib trunk line, the *"TransSib–Kazakhstan side corridor"* runs out in southeast direction at Petropavlovsk in West Siberia, crossing Kazakhstan (and touching the new capital city, Astana), which is continued in China and leads to the ports of the Bohai Bay/Yellow Sea, after a forking behind Lanzhou. The international significance of this side-corridor is given by the linking of three countries. For the foreign trade of Kazakhstan, as an infrastructure tool allowing the integration into the global economy, it provides an eastward access to the world seas, and also creates a direct connection to its most prestigious partner, Russia that is the most important both from political and economic aspects. A *disfavourable* aspect of the technical and operational features is the relatively low proportion of electrified and double track routes compared to the other side-corridors *(Table 2),* but the biggest obstacle to the continuous traffic is the lack of up-to-date technical linkage between the wide and the narrow gauge networks at the border crossing station of Dostyk/Alashankau (Eurasian Land Bridge… 2012).

The *"TransSib–Mongolia side corridor"* running across Mongolia in a southeast direction branches out from the trunk corridor in the vicinity of the East Siberian Ulan Ude, with the same wide gauge and then continued with normal gauge in China right to Beijing. This railway, in addition to providing a "lifeline" for Mongolia, a country heavily dependant upon Russia and lately also on China supplying vegetable food, is also the most ideal route of the trade between Russia and the central part of China, as this is the wide gauge track most approaching the Chinese metropolitan region. Its advantage from a technical aspect is that it is almost 90% electrified and equipped with two parallel rails (the Mongolian section has only one rail).

The *"TransSib–Manchuria"* side corridor stemming out in southeast direction from the trunk corridor east of Chita is continued in Manchuria. Due to its junctions within Manchuria (eastward and southward), this is the geopolitically most sensitive TransSib side corridor. Running in an eastward direction across Manchuria, it offers a short transit route via Ussuriysk to the Russian port complex of the Vladivostok region (Vostochny, Nahodka). The Manchurian is the easternmost TransSib side corridor system, which, despite the two breaks of gauge, is attractive for Russia because of its short length for both export/import and transit shipments (even besides the fee to be paid to China for the use of the railway), as opposed to the much longer line running only in Russian areas (in the vicinity of the Amur River). In addition, it is an infrastructure promoting the heavy industry cooperations between Manchuria and Russia. In addition to serving Russian and Chinese interests, the side branch of this side corridor is of vital importance for the international land transportation relations of North Korea *(Figure 2, cutout),* and also for South Korea in the future if the border between the two Koreas will be opened permanently (*Barrow* 2007).

4.1.2 The central trans-Eurasian corridor

South of the TransSib, but passing by the Black Sea and the Caspian Sea, there is this railway corridor running to China via [Bratislava]–Chop–Donetsk–Volgograd–Aksarayskaya–Dostyk. It is a corridor consisting of lines from four countries, of which three are wide gauge tracks. The only connection to the Chinese normal gauge network at Dostyk is used by this corridor as well. The mission of the central corridor is to create a transcontinental transportation possibility on a shorter route between the northern part of the Carpathian Basin and West China across the south part of the Sarmatian Plain and Kazakhstan (passing by the TransSib). Russia is evidently counter-interested in this, although the central corridor is far from being a real competitor of the TransSib, as the technical problems considerably limit the meeting of the expectations, as just over one-third of the route is electrified, and the total of the double-track sections lags far behind the trunk line and the side lines of the TransSib network. As regards reliability, the side line branching out at Bucharest is the most problematic, as it leads across the politically unstable Transnistria in Moldavia. It would be reasonable to create a common hub for the Carpathian Basin and its foreground. The most suitable location for this purpose – taking, among other things, the transport demands of the regional automotive industry into consideration – seems to be Bratislava (RETRACK… 2012).

4.1.3 The TRACECA

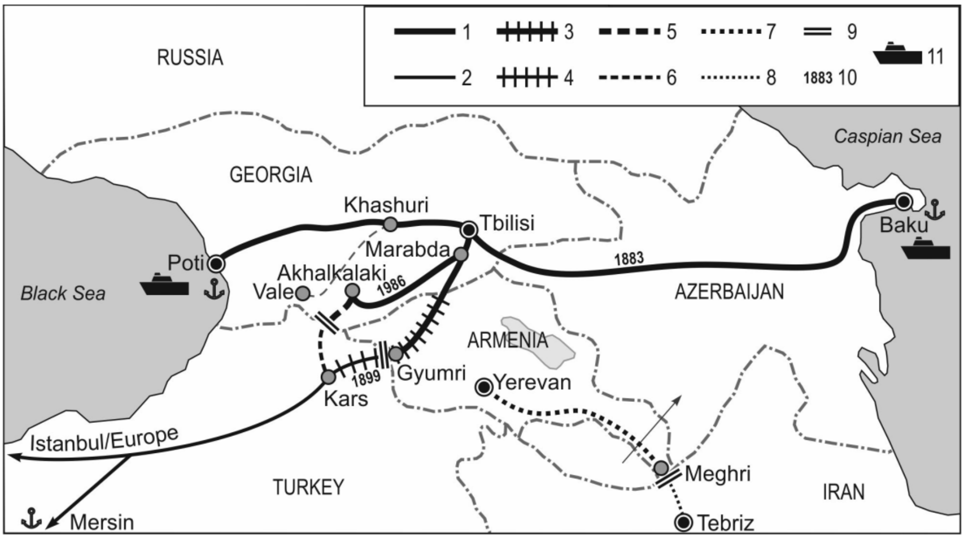
By signing the TRACECA multilateral agreement aiming at the implementation of this southernmost trans-Eurasian land corridor, the European Union's goal was to integrate this corridor into the TEN-T, in order to promote interregional relations (*Ziyadov* 2005). The TRACECA is designed to create, by the *bypass of Russia* and the revitalisation of the Medieval Silk Road, the shortest connection for the now independent CIS states toward Southeast Europe and the Mediterranean, and also the Far East (primarily to the Chinese ports allowing an access to global trade, to the world sea – http://www.traceca-org.org).

The trunk line of the "New Silk Road" is the section between the Georgian port, Poti and the city of Dostyk on the Kazakh/Chinese border, but its eastern connection allows an access to *Lianyungang* (and other ports) via Lanzhou in China, while it can be supplemented in the west by various European connections from the ports of train ferries navigating on the Black Sea – e.g. to Bratislava (Black Sea Region… 2012).

In its Central Asian section there are two alternative routes from Baku across the Caspian Sea *(Figure 2).* The northern branch (via Aktau) is more advantageous for the trans-Eurasian long-distance international transit and also for Kazakhstan, while the south branch, across Turkmenbashi, is more important for the southern and eastern part of Central Asia *(Table 3),* as it links almost half a dozen countries and also allows an access to Iran by its southern side branches.

Figure 2

Railways in the Caucasian section of the TRACECA



Legend: 1 – Operating wide gauge tracks; 2 – Operating normal gauge tracks; 3 – Non-operating wide gauge tracks; 4 – Non-operating normal gauge tracks; 5 – Wide gauge tracks under construction; 6 – Normal gauge tracks under construction; 7 – Wide gauge tracks planned; 8 – Normal gauge tracks planned; 9 – Year of completion of the railway; 10 – State border; 11 – Break of gauge at border crossing station.

Source: Calculated by the authors on the basis of Jane's World… 2010 and several other studies.

Table 3

The TRACECA route

	Total length, in kilometres	From which		Number of voltages	Number of state borders	Number of breaks of gauge	Maximum axial pressure	Delivery time of containers
		electrified, in %	double track, in %					
a) Poti–Gardabani–Boyuk K.–Baku–Turkmenbashi–Khodza–Kales–Saryagash–Dostyk	4759,7	43.9	42.8	2	4	–	23–25	25
b) Poti–Gardabani– Boyuk K.–Baku–Aktau–Dostyk	5511,0	29.8	37.3	2	2	–	23–25	24*

* RETRACK 2012.

The infrastructure of both routes is just as obsolete. Non-physical barriers – especially bad management and operation – also contribute to the weak attraction of this corridor. The lack of coordination among the different means of transport, the lack of information and the heavily loaded ports in Baku and Aktau make the Caspian section one of the least reliable links of the corridor.

In addition to this two-branch trunk line, there are many versions in the plans, as the *different actors of the larger area of the TRACECA do their best to have the route versions most suitable for their own self-interests accepted.*

The *geopolitically most sensitive (western) section* of the TRACECA *is the part between the Caspian Sea and the Black Sea/Mediterranean Sea,* due to the serious conflicts of the Caucasian countries both among themselves and with Turkey on the one hand, and because of its macro-regional hub role unfurling in the semi-global trade, considered as important by China, Iran, Central Asia and the European Union alike on the other hand. For the time being it is fanatical nationalism that blocks the making of reasonable and implementable decisions on the routes of the corridor in the Caucasian region, on the basis of compromises among the neighbour countries.

Today it is only *Georgia and Azerbaijan through which trans-Caucasian railway traffic is free from hindrances* (e.g. a direct "logistic express" service operates between Poti and Baku [*Tschaidse* et al. 2001]). To this line, however, Armenia can only join through Georgia, because both Azerbaijan and Turkey made the formerly unhindered traffic across the Armenian border impossible in 1994 *(Figure 2).* This makes Armenia search other routes across Iran, towards the world seas (Jane's… 2010. Armenia). For creating a connection between the Georgian capital city and Turkey, the simplest solution would be to renew and reopen the southern section of the Tbilisi–Gyumri–Kars railway through Armenia, established in the late 19th century. However, the international political forces aiming at the isolation of Armenia favour a bypass route that would directly link Georgia to Turkey, west of Armenia (Kars–Tbilisi… 2012). This Baku–Tbilisi–Marabda–Akhalkalaki–Kars – BTAK – railway line, also supported by UNECE/UNESCAP *(Figure 2)* has a great advantage of allowing Turkey to join in (Euro-Asian Transport Linkages, 2012; Logistic Processes and Motorways of the Sea II, 2012). For the creation of the southwestern route version across its own state territory, Turkey has two very powerful arguments:

- the railway tunnel to be completed by 2015, running from Istanbul beneath the Strait of Bosporus (which makes the rather costly navigation on the Black Sea unnecessary), and
- the fact that the land corridor can be integrated into the a PEN/TEN-T network through Istanbul, across the East Balkan, to the states of Central Europe, Greece, and also the other countries of the north shore of the Mediterranean Sea.

Using its geopolitically very advantageous geographical location and its medium power status, *Turkey tries to strengthen its transit role* in trans-Eurasian goods transportation. For this effort of theirs, they found a partner in China, which wishes to reach Europe through Turkey, avoiding the politically risky trans-Caucasian route (*Engdahl* 2012).

The construction of the TRACECA alternative through Turkey, however, is *conflicting with the interests of Georgia* which has a gateway role on the eastern shore of the Black Sea, as it would weaken Georgia's role in transit. Georgia is thus trying to enhance its attractiveness, in addition to the railway reconstruction, by the intensive enlargement of its port capacities, increasing their role in sea ferry transport. As regards the non-directly interested states, the *counter-interested Russia* sees that the New Silk Road is mostly advantageous for Western Europe – as a tool for intrusion into the markets of the Caucasian–Central Asian countries and for pushing Russia out. Accordingly, as a kind of monopolisation and amendment of the project, Moscow politicians – with a rather peculiar interpretation – also consider the St. Petersburg–Moscow–TransSib–Kazakhstan railway chain as part of the New Silk Road, arguing that this route is expected to manage a more intensive traffic and also promotes the connection to China (Lagerhauskette … 2006).

As opposed to Russia, *Ukraine* has significant ambitions about joining the TRACECA, so it is even willing to participate in the construction of the BTAK railway, in order to bypass Russia (Ukraine und… 2007).

Kazakhstan with its successful efforts to reach a leading role in Central Asia has a vested interest in reaching the Iran network by new railways starting from its Caspian (petroleum producing) region, in order to diversify its possible access routes to the sea.

The railway networks of Azerbaijan and Iran have already been connected, and on the eastern shore of the Caspian Sea the Kazakhstan–Turkmenistan–Iran (Gorgan) line will be completed by 2014 (Iran's part… 2012). All in all, a "breakout", an access to a warm sea also serves the interests of Russia, as it has been stated by the Russian government several times.

Kazakhstan is trying to make the most use of its mediating/transit role, coming from its geographical location, in goods transportation between China and (Southeast/Southern) Europe. For Kazakhstan then, the southwestern connection allowing an access to the Mediterranean Sea *through Turkey* has also gained strategic importance. In this effort, not only Azerbaijan, but Georgia has also become a partner of Kazakhstan (Meeting… 2005). Kazakhstan is looking for alternative routes for its wheat export, weakening its dependence on the transit across Russia. For this purpose, the necessity to use the would-be BTAK railway creating an access to the ports of the Mediterranean Sea has also been raised (*Patsuria* 2012, *Khankishiyeva* 2012). According to the agreement between the governments of Kazakhstan and Georgia, Kazakhstan would export cereals below the global prices to Georgia, in return for the reduced fees to be paid for the use of the railway of the Caucasian state (Kazakhstan to cease… 2012).

As a matter of fact, two countries are masters of using the advantages coming from their central location. *A real macro-regional, international turntable role is that of Azerbaijan.* In the Baku region, the west-east TRACECA corridor, favoured by the successor states of the Soviet Union and also by Turkey, China and the EU, is crossed by a north-south, Russia–Central-East/South Asia corridor (*Mamedov* 2001).

Kazakhstan has a turntable role in the traffic between Russia and Central Asia, and also between China and Central Asia, and China and Russia. In fact, Truel (2011) thinks it is not an exaggeration to say that the new capital city, Astana may become the new "logistic hub" of Central Asia, and this macro-region might join the global supply chain via this city.

The so much needed development of the corridors briefly featured above is delayed mostly by *insufficient financing and political opposition.* Even the petroleum-exporting countries are unable to finance on their own the investments that have been planned since the 1990s. They are in bad need of external resources. A formal criterion of the access to these resources is the harmonisation of the quality management systems to ISS (International Standard System [*Grytsenko* 2010]) as soon as possible. *External financing can be really successful if the support of those multinational financers is gained that consider the respective infrastructure projects as a part of the global network of routes.* One of these potential financers is the Narvik seated "New Corridor AS" company which considers the Trans Sib as a part of the Eurasia–Scandinavia–Atlantic Ocean–North America intermodal semi-global transport chain *(Figure 3).*

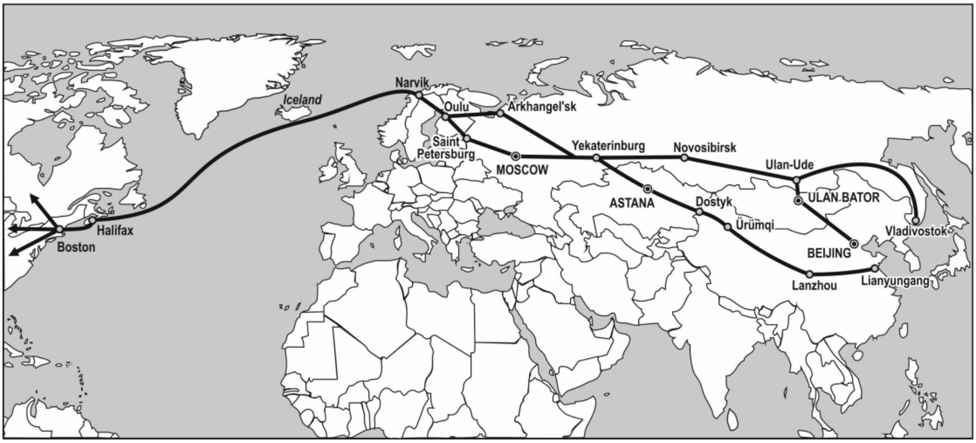
5 Traffic of the corridors, time and cost of transports in railway based container transportation

5.1 The development of intermodal (combined) transportation – with special regard to the container block-trains

Intermodal transportation is not only a possibility but also a necessity on the trans-Eurasian corridors, because of the geographical/network endowments. Factors making combined transportation indispensable include the impermeability of the Korean Peninsula, and the sea between Japan/South Korea and the Russian ports. A specific means of intermodal transport are train ferries on the landlocked seas (Caspian Sea and Black sea) and on the Lake Van. The most widespread

Figure 3

The semi-global Asia–Europe–North America corridor



Source: Nord-Ost-West Korridor… 2003.

form of intermodal technology in the respective macro-region is *container transportation.* Of the total volume of container traffic between the Far East and Europe, 97% is managed on the peri-Eurasian navigation route across the Strait of Suez and only 3% is done on land, by the trans-Eurasian railway corridors. Of the total traffic of the latter, more than 75% is done on the TransSib system, the proportion of the Central Corridor is 21%, and that of the TRACECA is not more than 4% (Shipping Rates… 2008). The transportation of railway containers is done on some wagons of traditional cargo trains in the case of weak demand. On distances of thousands of kilometres, however, *block-trains* made up only from container-carrying wagons are more efficient, especially for the servicing of automotive and computer factories with large transport demands (Development… 2012).

In recent years, the supply of block-trains has multiplied – nor only as regards their frequency but also the destinations they connect. The trans-Eurasian block-trains can be categorised into the following groups: those running

- between port cities (e.g. Vostochny–Hamburg, Shanghai–Antwerp) with a 21–30 day transit time;
- between port and non-port hubs (e.g. Nahodka–Berlin, Hamburg–Beijing, Nahodka–Buslovskaia, Antwerp–Chongqing) with a 12–15 day transit time;
- between non-sea port big cities (e.g. Lanzhou–Duisburg, Beijing–Berlin, Shenyang–Leipzig) with a 16–25 day transit time (*Gresley* 2011–2012).

The large-distance block trains that are much more expensive compared to sea transportation are still feasible because they usually transport technical equipment of high specific value, mostly in just in time system. (E.g. the city called Chongqing by the Yangtze River concentrates more than 20% of the world's laptop, notebook and LCD manufacturing, the largest market for which is Western Europe. Trains running to the North Sea carry mostly chemicals on their return to China – RETRACK 2012.)

5.2 Time and cost demand of container transportation

The time necessary for the delivery of container goods to the railway destinations is determined by the category of the trains, the quality of the tracks, the speed depending on the traffic management and also by the waiting times due to different reasons. The average speed of the container trains is 50–80 km/h (on the TransSib trunk line it is 76 km/h), but the waiting times coming from all sorts of reasons maximise the distance done by the trains in one day at 800 (max. 1000) kilometres – which is not more, on the other hand, than 300–350 kilometres on e.g. the Kazakhstan section of the Central Corridor (Russian Railway… 2012). Cargo trains are the fastest on the Chinese sections. On the trunk line of the TransSib there are *increased speed* (express) container trains recently, managing 1200–1300 kilometres per day. The transit time of containers has almost been halved since the 1970s/80s (compared to the latest express trains). (E.g. between Vostochny and Finland it was reduced from 21 days to 11.5 days, between Vostochny and Switzerland from 32 days to 17 days – Transit time from… 2012.) Transit time is varied, depending on the length of the respective corridors, the quality of the tracks, and also the mode of transportation *(Table 4)*.

Table 4

Costs and transit time of a 20' (feet) <16.5 ton container between Duisburg and Lanzhou on the different routes, with the two different transport modes

Route	In single wagons		By block-trains	
	USD	days	USD	days
TransSib–Kazakhstan route	6,730	28	3,200	18
TransSib–Mongolia route	6,705	38	4,700	22
TransSib–Manchuria route	6,705	39	4,600	20

Source: Original source called "Freight tariff quotation for single wagon loads; consultants assessment for block trains based on market prices 2011" published in Table 41 of the study on RETRACK.

As regards the *cost of container shipment,* the difference between sea navigation and railway was drastic in the first years of this century. The prices of container shipment *among* the Asian and the European *ports,* however, almost doubled in 2012 due to the declining traffic, increased fuel prices, natural disasters leading to the temporary closing of ports etc. (*White–O'Neill* 2012). Despite the increased costs, the *price of sea transportation among the ports of Western Europe and East Asia is still only one third or half of the land transport price.* If there is a need, on the other hand, for a transport not directly between sea ports but within a Far East sea port (e.g. Shanghai) and a landlocked European city (e.g. Berlin), the costs of combined transport are almost the same at those of the pure sea shipment. Between landlocked destinations far away from the seas (e.g. Urumqi and Berlin), container block-trains are the cheaper solution *(Table 5).*

5.3 Development of the traffic volume on TransSib, results expected from technical improvements and operation

As a manifestation of the process of the thawing of the political tensions and in order to increase currency revenues, in the early 1970s, when the Suez Canal became unusable, the Soviet Union announced the railway service called Trans Siberian Container Service (TSCS) between the Far East and Western Europe. As an effect of the "discount tariff" applied by the Soviet railway company, the first peak of the container traffic was in 1987, in the time of the perestroika, with 160 thousand TEUs. On the Japan–Western Europe route, the east to west transport was dominant in the 1980s and the early 1990s, primarily because of the export of technical devices.

After the disintegration of the Soviet Union changes took place in the economic and political environment of container services, and also in the institutional/organisational conditions. As a result of the recession in the Russian economy and foreign trade, the nadir of the container transport was in 1993, with 30–35 thousand TEUs (*Shirres* 2011). The progress after this critical situation was induced by the start of the economic growth and the improvement of the containers/logistics services, on the one hand, and the state subsidy or the transit shipments and the armed protection of the trains, on the other hand. The shift of the container traffic induced by Japan from railway to the sea routes decreased the growth of the traffic of the TransSib from the mid-1990s, but the new international automotive cooperations of different kinds still generated railway or combined container traffic. There were *years when 60% of the container traffic of the TransSib was already induced by South Korea* (European Conference… 2005).

Table 5

Time demand of container transport between China and Germany by combined and railway transport on the respective trans- and peri-Eurasian routes

Mode of transport	Route	Distance, in kilometres	Costs, in USD	Total transit time, in days	Number of customs check/reload points
a) Shanghai–Berlin route					
Combined	Shanghai–Rotterdam (sea)–Berlin (railway)	20,752	4,420	28	1/1
Railway–TransSib	Shanghai–Vostochny–Moscow–Brest–Berlin	13,021	4,090	22	3/2
Railway–TransSib–Kazakhstan	Shanghai–Dostyk–Moscow–Brest–Berlin	11,777	3,765	26	4/2
Railway –TRACECA	Shanghai–Dostyk–Aktau–Baku–Poti–Varna–Budapest–Berlin	18,389	7,974	42	4/6
b) Urumqi–Berlin route					
Combined	Urumqi–Lianyungang (railway) – Rotterdam (sea route) – Berlin (railway)	24,660	7,520	38	1/2
Railway–TransSib–Manchuria	Urumqi–Manzuhouli–Moscow–Brest–Berlin	13,982	3,903	26	3/2
Railway–TransSib–Kazakhstan	Urumqi–Dostyk–Moscow–Brest–Berlin	7,773	2,559	20	4/2
Railway–TRACECA	Urumqi–Dostyk–Aktau–Baku–Poti–Varna–Budapest–Berlin	14,385	6,773	38	4/6

Source: Combination and abbreviation by the authors of Tables 8 and 9 of RETRACK (2012) edited from the figures of Study for the Project of the Integrated Logistics System and Marketing Action Plan for Container Transportation, JICA, December 2007.

In the new century, the *proportions of the respective actors* (countries with transport needs) *generating transit has been very hectically changing,* due the changing pace of economic development and other reasons. Even in the early 2000s, for example, there was a rapid development of traffic on the Vladivostok–Vainikkala (Finland) route, generated mainly by the South Korean automotive industry (the volume of 124,473 TEUs in 2004 shrank to only 643 TEUs by 2008). The volume of traffic generated on the TransSib by Japan is still negligible, as a large part of the country's industrial production has been outsourced to faraway countries.

The *dominant generator of international container traffic* on the TransSib is now *China* (*Misharin* 2008). The volume of the China–Russia railway container traffic is 135 thousand TEUs, well above the traffic generated by Japan and South Korea together.

These days, the *larger part of the total cargo traffic* on the TransSib (an annual 200–250 million tons) is made by *domestic* traffic generated by the spatial division of labour among the regions and the supply of the population, but the volume of *international* traffic almost reaches this. Of the international traffic, however, *only 0.5% (!) is transit traffic,* while the proportion of export starting from Russia reaches 93%. The share of import to Russia – 6.5% – is negligible compared to the export. *From container traffic, on the other hand, transit has a much more considerable share;* still, it only holds position three, lagging far behind import and export shipments *(Table 6).*

Table 6

Breakdown of total and container traffic of the TransSib by directions (main routes), 2011

Direction/type of traffic	Volume of total traffic[a)]		Container traffic	
	million tons	%	TEU	%
Export from Russia	90.2	93.0	142,048	39.0
Import to Russia	6.3	6.5	189,540	52.1
International transit	0.5	0.5	32,415[b)]	8.9
Total	97.0	100.0	364,003	100.0

Notes: a) – Data estimated by the authors, on the basis of 69 million tons of registered traffic in the first 8 months of 2011; b) – According to the homepage of the Trans Siberian Landbridge: 10,000 TEUs in 2010.

Source: Original: RETRACK Interview, Russian logistic experts December 2011 and Freight One OJSC Presentation on the 20th CCTT Plenary Meeting, Odessa, 22–29. 10. 2011, published in Tables 42 and 45 of the RETRACK study, some data of which served as the basis of calculation and compilation by the authors.

The total (domestic + international) container traffic of the TransSib reached 749 thousand TEUs in 2010 (http://www.rail.co/2011/11/29/trans-siberian-land-bridge), of which almost one half was international.

Coming from these, by far the *largest volume of cargo traffic on the border crossing stations* along the TransSib flows through the Russian *ports* of the Far East (Vladivostok/Vostochny/Nahodka) – in 96% towards the sea. The *second* busiest is Zabaikalsk, the Russian border crossing station of the TransSib–Manchuria side corridor, whose special characteristic among the border crossing stations featured in *Table 6* is the dominance of the inward (western) flow induced by the Chinese export goods. *Position three* is held by a border crossing station of the *TransSib–Kazakhstan* side corridor, Grodekowo, where the number railway wagons leaving the country is more than twelve times that of the incoming wagons. *The least busy* is the border crossing station of the *TransSib–Mongolia* side corridor, Naushki, where the number of wagons leaving Russia is approximately five times the number of wagons arriving at the country.

All in all, only 5% of the total volume of the border crossing stations examined is towards the west (i.e. Russian import and transit) *(Table 7)*.

Table 7

Volume of the traffic on the TransSib, measured at border crossing stations in 2010

Direction	1000 loaded wagons across the following border crossing stations				
	Zabaikalsk[a)]	Naushki[b)]	Grodekowo[c)]	Far East ports	total
To the east	173	36	73	715	996
To the west	13	7	6	26	53
Proportion of return wagons, in %	8	20	8	4	5

Notes: a) – A total of 25.5 million tons in 2010 (of which 30% is Russian petroleum exported to China), of which 14 million tons by containers; b) – Container goods: 0.6 million tons; c) – A total of 12 million tons in 2010, of which 1.2 million tons container goods.

Source: Freight Two OJSC, Presentation at the 20th CCTT Plenary Meeting, Odessa, 28–29. 10. 2011. (Published as Table 44 in RETRACK 2012) Original data source of container goods unknown.

The volume of trade *between China and Russia* was 15 million tons in 2006, which grew to 50–60 million tons by 2010, *approximately two-thirds* of which *ran through the TransSib,* mainly on the branch across Manchuria.

The *structure of goods dominated by* mostly *domestic demand* is rather one-sided, with a *total of two-thirds weight of coal and petroleum/petroleum products* with a low unit value in the total turnover, while the proportion of manufactured industrial goods is only 3% (Freight Two OJSC… 2011). However, *also in international relations, the TransSib is basically a corridor system oriented to the export of Russian energy carriers and other raw minerals, as well as lumber and metals.*

One group of factors influencing the volume and directions of container traffic and the change of the proportion of the respective actors is often changing, which makes the planning activity of the transport assigners difficult even in the medium run. The most important of these factors is transit tariffs, which are rhapsodically changing not only in Russia, but also in other countries. Occasionally, the intolerable transit tariffs of one country or another can make the traffic of the total of the corridor stagnate or even decline. (This included the unrealistic tariff for transit shipments introduced by Poland in the early 2000s.) In other countries the amount of VAT is unacceptable. In order to remedy these problems, the *interests, resources and technologies of the growing number of market actors participating in the logistics chain* during the container transit should be coordinated. The 2000s saw changes in the circle of the market actors, namely the operators of the block-train services. Formerly, the RŽD (Russian Railways) had enjoyed an actual monopoly on the TransSib corridor, but now there are several foreign (German, Belorussian, Kazakh etc.) public or private companies on the transport market.

The large number of hardly solvable traffic management/technological problems includes (due to the asymmetric nature of import/export volumes) the considerable difference between loaded and empty wagons, and wagons of different size by direction. The turnover of the ports in the Vladivostok region remains below their capacity, so it is not excessive traffic but the deficiencies of the organisation of loading, and even more so the lengthy checks concomitant with the excessive administration that make containers stay a day or two in the ports before they are loaded on trains (Russia's Vladivostok… 2012).

Results expected of the technological development and improved management of the TransSib may improve the conditions for combined transport. Since the completion of electrification along 2003, *plans* have been made for traffic with 120 km/h block-trains in the total length of the railway line. (This would make the TransSib catch up with the speed norms specified for the European international trunk lines.) The technical parameters which may only be altered at huge expenses include the inadequate height of the tunnels, which does not allow the shipment of containers loaded on top of each other. For this reason, trains on the East Siberian section can only carry one-third the number of containers transported in the USA.

In order to reach competitiveness against the sea route, railway companies must spend on purchasing large (40') containers, together with the purchase of the special railway wagons adequate for them (with extra loading capacity), and the railway stations must also be re-built in order to be capable of the loading of large containers. (Of the 49 loading stations along the railway line, only 13 were suitable for the movement of 40’ containers in 2005; by 2012 all of them were up to this task.) The transport market of the TransSib–Manchuria (in fact, the TransSib trunk line) would be significantly enlarged by a permanent railway connection between the two Koreas.

The *transit capacity of the TransSib* does not only *depend on* technological developments but also on the *organisation of traffic,* the *cooperation* and joint efforts of *countries interested* in transit. In order to handle the international transport problems, the International Coordination Council of Transsiberian Transportation was founded in 1993. The 80 founding members of this organisation include a one and a half dozens of railway companies that contribute to the improvement of the efficiency of this corridor (Russian Railways… 2012).

In order to considerably decrease the time of container transit, the RŽD Company announced in 2009 the ambitious programme called *“Tans-Siberian in Seven Days”.* The implementation of the programme, with a total expenditure of 11 billion USD, would allow a guaranteed maximum 7 days transit time of the container trains for the distance of 9000 kilometres by 2015. The realisation of this plan, however, is impossible without the decrease of waiting times. The simplification of administration and registry at the border crossing stations is served by electronic administration (introduced by Naushki among the first ones), single documents used in all countries (“On Transit”), but the plans also include the implementation of “green corridors” (*Shirres* 2012).

From among the other trans-Eurasian corridors, we are only going to deal with a few characteristics generating traffic for the TRACECA.

5.4 A few characteristics of the traffic on the TRACECA

The traffic volume of the TRACECA is much lower than that of the TransSib, mainly because of the several interruptions (sea ferries, gauge breaks), and secondarily because of the smaller capacity of the railways and the more limited transport demand of the underdeveloped region along the Central Asian southern section of the route. The majority of the traffic is domestic or bilateral; international transit is weak for the time being. (With the exception of the Caucasian section: three-quarters of the railway transit traffic of Georgia are generated by the neighbouring Azerbaijan [*Ezugbaia* 2007].) The most intensive traffic is managed on the East Kazakhstan section, as a result of trade with China (Kazakhstan will… 2012), the weakest across the Caspian Sea and Black Sea interrupting the land corridor. On most sections of the TRACECA, *westward flows are stronger,* reaching 72–76% in the Caucasian region (*Ezugbaia* 2007).

Across the busiest border crossing station, Dostyk/Alashankau, a total of 11.3 million tons of goods flowed to China in 2010 (half of this from Kazakhstan); in the opposite direction, 3.5 million tons of (predominately Chinese) goods were transported to Kazakhstan. The transit capacity of the Chinese–Kazakh border was significantly increased by the new Jinghe–Yining–Khorgos–Altynkul' railway operating between the two countries since 2010 (with a total traffic of 5.5 million tons already in 2012) (Khorgos… 2012). The new border crossing station shortened the route from the Chinese border to Almaty by 520 kilometres (The Latest... 2009), increased the transit potential of Kazakhstan (especially in container transport), and decreased transit time between West China and Europe (Kazakhstan and China… 2012). Of the total container traffic of the Kazakh–Chinese border in 2010 (186 thousand TEUs), the strongest transit traffic is generated by China–Kazakhstan–Central Asia (50,100 TEUs), a significant part of which was made by shipments of parts between the automotive plants in South Korea (Pusen) and Uzbekistan (Abluk). The West China–Western Europe transit lags far behind this with its annual volume of 11–12 thousand TEUs (Rakhimov, 2011/2012), although this also includes the flow of goods on the Chongqing–Germany/Holland route (RETRACK… 2012). The Kazakh–Chinese cargo traffic is projected to reach 793 thousand TEUs by 2020, while the total cargo traffic will be 28.2 million tons in 2015 and 48.5 million tons in 2020.

5.5 A brief summary of the risks of the peri- and trans-Eurasian routes/corridors

The provision of the transit navigation route on the Artic Ocean is the economic interest of the Russian government at any time, due the incomes coming from the services offered on this sea (icebreakers, ports, navigation, meteorological/ hydrographical forecasts etc.). For this reason, this route has a low level of risk both with regards to politics, and the safety of shipments and life.

Some sections of the southern peri-Eurasian (Suez) sea route (in Southeast Asia and the Gulf of Aden) are still risky for cargo and life to a limited extent, due the activity of pirates, but the presence of the navy ships of several interested countries can already minimise this risk in the near future. Although the political risk potential of the Suez Canal is high (depending on how often it is blocked by extremist political forces or war actions), the international powers interested in its operation are able to guarantee its operability within a short time.

For trans-Eurasian transit transport, the route least risky from the political aspect is the trunk line of the TransSib. China and Russia will be even more cooperative in the future in the field of economy, due to their mutual dependence. Mongolia will probably not be the "Golden Apple of Discord" of China and Russia, either. This will keep the level of political risk low both on the TransSib–

Manchuria and the TransSib–Mongolia side corridors. The same may be true for the TransSib–Kazakhstan side corridor (in fact, for the Central Corridor), as in the development of the relationship between China and Kazakhstan, the mutual economic interests are more important than the possible tensions coming from the religious/ethnic differences.

What can be risky is the operation of the TRACECA corridor, especially its alternative track across the Trans-Caucasus and Turkey. In Central Asia, the southern route alternative close to Iran and Afghanistan may be the riskiest of all routes from political and ethnical aspects (despite the relative religious homogeneity), but the occasional natural disasters (earthquakes, wind-blown sand, storms, rock avalanches etc.), and also the unpredictability of the behaviour of some tribes increase the risk of transit.

6 Alternatives for Hungary to join the trans- and peri-Eurasian corridors

As regards the sea routes and land corridors introduced so far, for the *foreign trade of* the Carpathian Basin and within that *Hungary, it is only the Suez sea routes and the TransSib corridor that have a real significance.* Bulk goods and large shipments are almost exclusively container goods predominantly transported to Hungarian destinations on the sea route, bypassing Asia from the south. For the delivery of container goods, the volume of which is negligible compared to that of goods shipped on sea, transporters usually use the trunk line of the TransSib via Moscow. *More than two-thirds of goods from Hungary flow through the mega-ports of the North Sea* (Hamburg, Antwerp, Rotterdam etc.), while the remaining one-third is managed by the ports of the northern Adriatic Sea and Constanţa. The ports of Bulgaria and Greece are very rarely used by Hungarian foreign trade.

Why these are the ports through which Hungarian foreign trade to the Far East flows and what ports may become significant in the future is determined, and will be determined by the combined impact of several factors.

6.1 "To the sea, Hungarians!" – but where?

In the first half of the 19th century, in search of relative economic independence from the Austrian Empire, Hungarian reform politicians tried to avoid the use of the port of Trieste. The Hungarian establishment agreed with Lajos Kossuth's proclamation, *"To the sea, Hungarians!",* but there were sharp debates on which non-Austrian ports should the railway lead to. The two main versions were Constanţa and the nearby Rijeka (Fiume), from which the latter was given a (domestic) railway connection. From the late 19th century on, Rijeka managed the major part of the Hungarian overseas foreign trade. The preference of the North Adriatic Sea was due to political and economic considerations in the first place, and at that time the transport geographical distance mattered a lot in the choice of the location of the port.

In our globalised world – when *(transport) geographical distance has lost much of its significance* – it is a topical and hardly answerable question which ports may be the most suitable destinations for Hungary's foreign trade with the Far East. To find the answer, we must take into consideration how the significance of distances in different interpretations has changed in the globalising world trade and what impacts the new transport organisational/logistics systems have had on the choice of the destination ports.

The significance of (transport) *geographical distance,* equal to the length of route to be managed by ships (in kilometres) has remained in those exceptional cases when both the production and the consumption of the shipped goods takes place in the destination ports, or their narrower catchment area.

Economic distance, i.e. the choice of transport tool, port and route on the basis of costs incurred during transport, has been more important than geographical for quite a while. Transport expenses depend in the first place on the size of the transport devices and the ports, the average level of their utilisation, the intensity of traffic and the tariff policy of the transportation company taking all these factors (also influenced by competition) into consideration. Economic distance must be taken into consideration especially in the case of routes where *both end points are landlocked* (but at least one of them is), so goods to the destinations can only be delivered by combined transport. For the minimisation of costs, the choice of the port (with adequate land transportation linkages for import and export) is of vital importance. Economic distance may be up to 30–60% longer than transport geographical one if the route incurring the lowest costs is chosen.

Coming from the fact that transport network distance is no longer an aspect to be considered in the design of the transport route, in fact, even economic distance is negligible, but the quality and diversity of logistic services are becoming the main criterion, and a new concept of distance, the *logistic distance* has been widely accepted.

The main factors determining the logistic distance include in the first place the frequency of scheduled ship lines, and the number of shipping companies and port service providers available in the ports, and also the competition that they have in the quality of services. The second group of factors is made by port capacity, equipment for the loading and handling of special goods, and land/inland water connection to the hinterland. The total of the costs from the sender to the addressee (transport tariff, costs of port services, official duties and other costs) are only factors of tertiary importance, on the one hand because if the first two factors are missing, then no transport can take place at all, and on the other hand because for transporters it is more important to optimise the delivery time of the shipment to preserve its consistency/soundness, and to have reliable services, which is considerably influenced by the traditional partnership between port service providers and shipping companies. The accessibility of duty free zones, available in some ports only, may also be attractive. In sea navigation, a more and more important factor in logistic distance is the depth of water in the ports (and partly the length of the quays, and berths), which determine the size of the serviceable ships. Mega-ships transporting the newest containers can only use a few ports for the time being, among which there is a larger "logistic distance" than among formerly used ports (suitable for the servicing of smaller ships).

The vanishing dominance of the choice of ports based on geographical distance and transport costs is clearly demonstrated by the fact that the *largest share of trade between Hungary and the Far East is not managed through the (Adriatic) ports in the vicinity of the sea route, but through the farther Atlantic rim, North Sea ports.*

The North Sea (Range/ARA) ports have reached, by the creation of a logistic system adapting to the globalising economy and favouring efficiency above all, and also exploiting their economies of scale, an unassailable advantage that have in many respects almost secured their monopoly in the field. Their highly developed and extra-high capacity infra- and suprastructure, their frequent shipping on several routes, and the quality of their diverse services make these megaports inimitable in Europe for a while. New, large capacity "heavy railways" (Betuwe, Iron Rhine) and motorways have been built towards their nearby catchment area, the Ruhrgebiet, and the capacity of the formerly built railways and roads in their hinterland reaching right to East-Central Europe has been enlarged, while the attraction of the inland waterways has not decreased.

With a view to the rising transportation costs (due to increasing fuel prices and other reasons) and the aspects of the environment, it would be reasonable in the future to provide the servicing of Hungary more and more from the geographically much closer Adriatic Sea and Black Sea (and maybe Aegean Sea) ports, which can be made attractive with adequate technical improvements. The realisation of this effort may be promoted by the spreading of the hub and spoke logistic system. The role of the Mediterranean hub may be increased in the future by the construction of huge Chinese distribution and logistic centres (in South Greece, on islands, in Sicily etc.), from where the Chinese export goods may be farther transported by feeder ships to the Balkan ports, and from these ports products could continue their journey on land routes to the Carpathian Basin. What extent this new goods flow will reach and how much it will decrease the traffic of the North Sea ports will basically depend on future economic growth, and also on the goods structure of the Chinese foreign trade to Europe.

For the Carpathian Basin (including Hungary), the ports of the landlocked seas and marginal seas of the Mediterranean (Adriatic, Aegean Sea, Black Sea) can serve as gateways. The leading ports in these seas are, both in capacity and volume of traffic, Trieste and Constanţa, but the ever sharper competition, the reconstruction of the railways leading to them, the construction of new motorways and the boom of inland navigation may change the capacity and the order of importance of the ports in the future.

Although Constanţa is at a larger geographical distance from Budapest than Trieste, it has the great advantage of the adjoining Danubian waterway on which bulk goods can be cheaply transported, i.e. the economic distance is much smaller than that of the other ports *(Table 7).* It has a further advantage in having *ample space for developments and it has traditionally good connections to Asia. Rijeka's* gateway potential and *attraction* for Hungary may significantly *strengthen* in the future if the mountain section of the Zagreb–Fiume railway is diverted to straighter lines with milder slopes, and if the transport capacity is significantly enlarged. The modern port of *Koper* will be *able to keep its positions* especially in container traffic. *Ploče* can be an important port for Hungary only if the infrastructure *of* Corridor *Vc* is constructed. (However, the construction of the motorway in Bosnia and Herzegovina, part of this project, seems to be unrealistic for the time being.) *Thessaly* has traffic below its capacity, but it has not been a regularly used port of Hungarian foreign trade since World War I. The least probable is the strengthening of the traffic between *Bar* in Montenegro and Hungary. The depreciated Belgrade–Bar railway is not part of any PEN/TEN-T corridor. Bar will not be competitive against Ploče in the combined (sea/land) transportation between the Far East and Hungary (*Erdősi* 2009).

7 Technical, logistic and transport policy problems of Hungary's joining the trans-Eurasian railway corridors

For Hungary those trans-Eurasian corridors may be relevant to which the country can potentially join (the TransSib and the Central Corridor). (The TRACECA can only have a very much subordinate supplementary role even in the best case, irrespective of whether the European gateway of the route alternatives is Constanţa, Varna or Istanbul.)

From Moscow to Western Europe (across Poland, Slovakia and Hungary), several international trunk lines join the TransSib. Of these, of outstanding importance is the TEN-T II (Nizhny Novgorod–Moscow–Minsk–Warsaw–Berlin) corridor railway. The trunk line [Moscow]–Kiev–Lviv–Krakow–Dresden/Berlin, across South Poland to Germany, forms Corridor III. The corridor railway marked

Table 8

Main characteristics of the transport infrastructures connecting Budapest to the ports of the Adriatic, Aegean and Black Seas, 2011

	Ports			Number of PEN/TEN-T corridor	Railway line				Length of highways, in kilometres	From which motorway, in per cent
Sea/city	capacity million tons/year	traffic			length, in kilometres	from		number of border crossings		
		million tons/year	container 1,000 TEUs/year			electrified, in %	double track, in %			
1 Adriatic Sea										
Trieste	65	52	2,650	V	680[a)]	81	70	2	557	100
Koper	22	15	500	V	650[a)]	82	69	1	580	100
Rijeka	25	10	140	Vb	595	100	17	1	560	100
Ploče	6	4,5	20,5	Vc				2	840	48
Bar	5	2,8	16,6	–	872	100	5	2	1,010[b)] 890[c)]	76[b)] 47[c)]
2 Aegean Sea										
Thessaly	28	16	273	X	1,104	100	11	3	821	95
3 Black Sea										
Constanța	68	46	670	IV	1,126	100	100	2	940[d)]	36

Notes: a) – Through Zalaegerszeg and Murska Sobota; b) – Through Nis; c) – Through Belgrade and Valjevo; d) – On the Arad–Sibiu–Pitesti–Bucharest route.

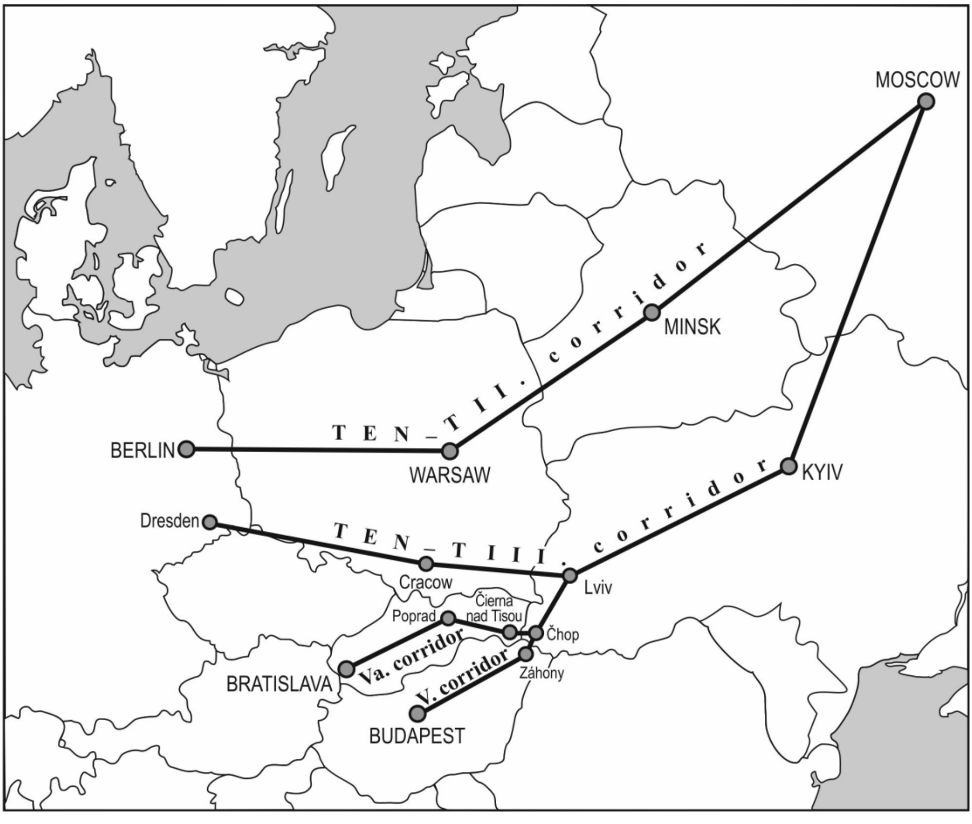
Source: By Ferenc Erdősi, calculated from the data of international timetables, route maps and websites of ports.

V.a to southwest from Lviv, to Uzhgorod–Chop–Čierna nad Tisou–Poprad–Bratislava, is the main line for the joining of Slovakia *(Figure 4)*.

The *Hungarian normal gauge railway joins the European extension of the TransSib at Záhony* (the wide gauge railway extended to Hungary across the Tisza River from the Transcarpathian town of Chop). Goods reloading in the years following World War II was limited to the station of Záhony and served the Soviet army in the first place, and also the management of the war reparation transports from Hungary. By the intensification of the Soviet–Hungarian foreign trade, Záhony more and more became the scene of bilateral goods exchange after 1949. For the development of heavy industry in Hungary, a growing volume of

Figure 4

East-Central European international railway corridors joining the TransSib in Moscow



Source: Edited by Erdősi, 2012.

coke, iron ore, crude iron and composition metals came from the Soviet Union. Also, the Hungarian textile industry, paper and wood industry acquired their raw materials form the east in the first place. In return, Hungary transported raw materials of foods, canned foods, fruits but also buses and machinery on this railway (*Bajor* 2009).

The volume of bilateral goods exchange reached 4–5 million tons as soon as in the middle of the 1950s, and Záhony was not enough for the movement of goods. The reloading capacity had to be enlarged, and so from 1957 to 1965 an approximately 28-kilometre long reloading zone was created by the extension of the wide gauge railway beyond the border. Traffic volume reached 13.6 million tons by 1979. Despite the number of government decrees made on the processing of the imported raw materials on the spot, no location of significant industrial plants was made, just as no waterway was constructed on the Tisza River that could have been integrated into the transport of imported mass goods (*Bajor* 2008).

The slowing down of economic development slowly decreased the traffic in the reloading centre already in the 1980s. In the 1990s Hungary turned its back to Russia and the states of the CIS (the foreign trade of the country has had a strong Western European orientation from that time on), *which shrank the traffic of the reloading centre to just one-third.* Although the market of the CIS has become more significant in the recent years, the traffic of the reloading centre, despite the growth, was in 2011 still only a quarter of the peak in 1979. Although the Hungarian governments theoretically supported the location of industry and the foundation of industrial parks in the reloading zone in the 1990s and 2000s, only moderate achievements have been made. Meanwhile, the *railway infrastructure and the reloading equipment became rather obsolete,* so they are in need of renewal or replacement in accordance with the new technological requirements.

The importance of foreign trade to the CIS region and the Far East (especially China) is in all probabilities going to increase, together with the role of Záhony in international goods transportation. The contiguous European motorway network is now only 60 kilometres away from the town. If the motorway is constructed right to the border to Ukraine, the role of land transportation will increase in the land traffic generated by the reloading centre in Hungary. As the chance of the construction of Ukrainian section of the motorway is negligible in the foreseeable future, international road transportation can only moderately decrease the proportion of the railway from total traffic.

The traffic of the East Hungarian reloading zone – generated by transit traffic in the first place – can be influenced by the competitors operating in the neighbour countries.

7.1 Competitors of the Záhony district

Only a few reloading centres were established at the western/southwestern border of the former Soviet Union, all of which had an intensive traffic. After the 1990s, the border was opened at a number of new places for railway traffic, but their turnover is low, and reloading usually takes place at the border crossing station *(Figure 5).* The overwhelming majority of these stations (in Poland or Romania) have no real impact on the Hungarian east–west transit. Even the railway reloading station in *Sighetu Marmaţiei,* west of the Carpathians, in the Ukrainian–Romanian–Hungarian triple border region, mainly serves Western Romania, and to a lesser extent (by transit) Serbia, Macedonia and Greece.

Among the neighbour countries, the most direct competitor of Záhony in the mediation of transit between Eastern and Central–Western Europe is the nearest reloading station operating in the Slovakian *Čierna nad Tisou.* This reloading centre is located only 8 kilometres from Záhony as the crow flies, but its advantage is due not to the better quality of its technical infrastructure but to the fact that transit transport is much cheaper across Slovakia than across Hungary.

The reloading centre in the Southeast Polish Medyka/Przemyśl and the railway running to Krakow from this place has hardly had any impact on the transit traffic of the Hungarian reloading centre (and the east–west and northeast–southwest transit traffic in Hungary), because it predominantly carries transit traffic generated by Germany and the Atlantic region of Western Europe, and to a smaller extent also by the north region of the Czech Republic.

7.2 Possible impact of the wide gauge railways planned in East-Central Europe on Hungary

In the major reloading zones of the surrounding countries (similarly to Hungary), the wide gauge railway was built to a length of 8–10 kilometres (e.g. Corridors II, III and IX) on the Polish and Romanian side. In addition to these short sections, the smooth supply of heavy industry with raw materials necessitated in two countries the construction of long wide gauge railway sections to the centre of the country.

From the border crossing station *Hrubieszów in Southeast Poland* right to the edge of the Silesian industrial region, to the railway station of Sławków Południowy/Olkusz situated only 30 kilometres away from Katowice, a wide gauge railway was built in 1979. This railway line (with its almost 400 kilometres length), unmatched in East-Central Europe (and which had no passenger traffic originally), was necessary for the transport of Soviet iron ore to metallurgy plants in Poland and sulphuric ore (pyrite) to the Soviet chemical industry on the way back.

Figure 5

Railway border crossing stations at the meeting point of wide- and normal gauge railway networks

Legend: a) – Breaks in gauge; b) – Border crossings of international significance; c) – Main international railway lines.

Source: Authors' construction.

After the disintegration of the Soviet Union, the transport of these minerals across the Ukrainian border dropped to almost zero and the domestic transport of coal was not significant, either.

By the intensification of the Ukrainian–Polish trade relations, the turnover of this special railway grew from 4.4 million tons in 2001 to 8.6 million tons by 2007 (*Erdősi* 2010a). This dynamic growth, however, had an unbalanced structure as regards transport directions. As opposed to the negligible volume of West–East traffic, the import of mass products (mainly iron ore) transported from Ukraine makes the bulk of the turnover. (The precious Polish pyrite is now mainly sold – at a higher price – in Western Europe – www.pkp-lhs.pl)

In Czechoslovakia, the railway connecting the Ukrainian Uzhgorod to Banovce was eliminated after World War II. Between the two World Wars, this had been the track on which southeast-northwest long-distance domestic transport was conducted (when Transcarpathia, now part of Ukraine, belonged to Czechoslovakia). Instead, Čierna nad Tisou became a new border crossing station and a reloading centre was established behind it.

In the *vicinity of* the second biggest city in Slovakia, *Košice,* a metallurgy plant was built in the 1960s that had no raw materials within the country. From Matejovce next to the border of Ukraine to Haniska, an 80-kilometre long wide gauge railway was built in 1960, which transported iron ore and coke without reloading from the Soviet Union. This railway was electrified in 1978.

Induced by the favourable tendencies of trade among the CIS countries (including Ukraine) and East-Central Europe, *plans have been made for the enlargement of the wide gauge railway network to west by substantial new sections:*

- In Slovakia besides the important trunk line running from Košice to Bratislava, across Poprad in the north, or in the south, close to the border, right to the hydroelectric plant on the Danube River in Gabčikovo, and also to Bratislava.
- The continuation of the former line to Linz in Austria (for the supply of the VOEST metallurgy plant in Linz with iron ore);
- Extension of the already existing South Polish wide gauge railway to the Czech–Silesian heavy industry centre, Ostrava.

These railways are expected to transport raw materials from the east to their nearby regions at a lower price than the present ones, as there is no need for reloading. Also, the manufactured goods and agricultural products could reach the eastern market with better conditions. The relocation of the reloading centres into the foreground of Western Europe can be advantageous for both the operators of the transit and other beneficiaries (industrial plants). The new reloading places would be built with efficient and environment friendly technologies up to the requirements of the 21st century and the reloading activity at their destinations can have a favourable impact on local/regional employment as well. (It must also be taken into consideration, on the other hand, that the stations along the Ukrainian border will be nothing more than simple stops after their reloading functions are lost.)

As a response to these challenges of the neighbourhood, in Hungary too an idea has been raised for the construction of the Záhony–Budapest–Gabčikovo–Bratislava wide gauge railway.

For Hungary, however, a country with scarce resources of raw materials and energy carriers, it is a *basic economic issue to become the transport/logistic centre of East-Central Europe.* The country does not only need the incomes directly deriving from this, but also the revenues coming from the industrial processing of a part of the transported raw materials. *The wide gauge railways to be built may have a detrimental impact on Hungary's position within the transport network of the macro-region.* Hungary thus has to seriously consider the consequences of the foreign investments described above.

7.3 Transport geographical endowments influencing the chance of the competition for the Central European transport centre role

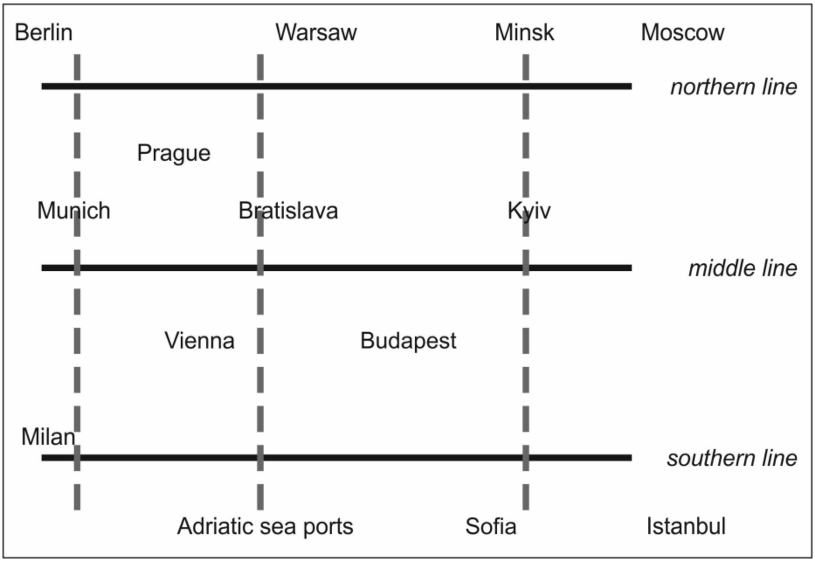
The *geometrical centre of the network of the main railway lines of Central Europe,* as it can be seen in *Figure 6, is the Vienna/Bratislava region,* the most easily accessible from all directions. Within the more advanced regions located west of this, connections are excellent, but there are serious deficiencies in the east. On the eastern side, it is either north or south from where the network can be acceded, and for a connection one must travel almost to the centre of the network. This macro-region (also including the Balkan Peninsula) has no outstanding economic centre. In the northern part of this macro-region, Budapest and Prague are not in the hubs of the network but in the centres of smaller regions created by partial networks. By the "distortion" (relocation) of the lines of the network, however, these capital cities may find themselves in a relevant position.

In connection with the China–Europe relation (direction) transports we may ask the question whether the line of this network starting from the Adriatic Sea can be relocated towards Budapest or not *(Figure 7)*.

A starting point for finding the answer is the Peace Treaty of Trianon. Hungary then acknowledged the right of Czechoslovakia to freely transport its trains from Bratislava to the Adriatic Sea (to Rijeka) across Western Hungary and on the two transverse lines meeting at the Murakeresztúr hub on the southwestern (Yugoslav) border. This obligation meant in practice that the former two Hungarian railways and the Austrian Semmering railway running from Vienna

Figure 6

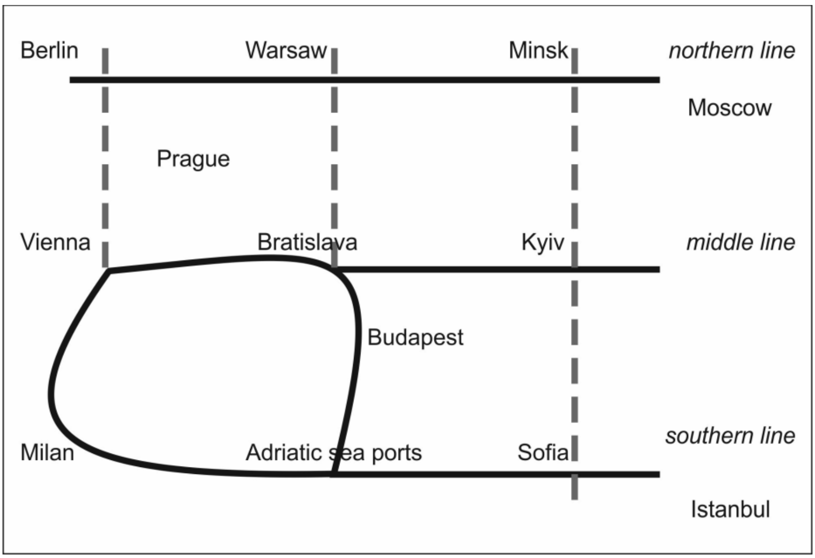
Model of the Central European transport network



Source: Edited by Tibor Bajor.

Figure 7

The Adriatic port–Vienna line and its network environment



Source: Edited by Tibor Bajor.

also to the sea (at Trieste) were intertwined (in the territory of the present Slovenia) in a away that they cut off other Hungarian railways from the sea and integrated the West Hungarian railway line into the Austrian East Alpine trunk line *(Figure 8).*

Some of these transport routes have become parts of the TEN-T network, on the recommendation of Hungary. These lines, however, were transferred by MÁV (Magyar Államvasutak, Hungarian Railways Company) for operation to the Austrian–Hungarian private railway company in 2011. In addition, these lines are the main lines of the Austrian owned Rail Cargo Hungaria to the ports of the north Adriatic Sea. This way, Hungary practically abandoned the utilisation of the economic advantages offered by these ports and also becoming the location of distribution/processing of goods arriving from China on the sea.

From a transport logistical point of view it is worth noting that the shipments from the North Adriatic ports have their shortest connection to the Danube River, the main axis of Central European river transportation (the corridor TEN-T VII) at Vienna and Bratislava. Taking the above described transport network into consideration, the forwarding of goods coming from the Adriatic ports can use the multimodal railway, waterway and aviation infrastructure of the two (nearby) capital cities and also in the region of the hydroelectric plant at Gabčikovo.

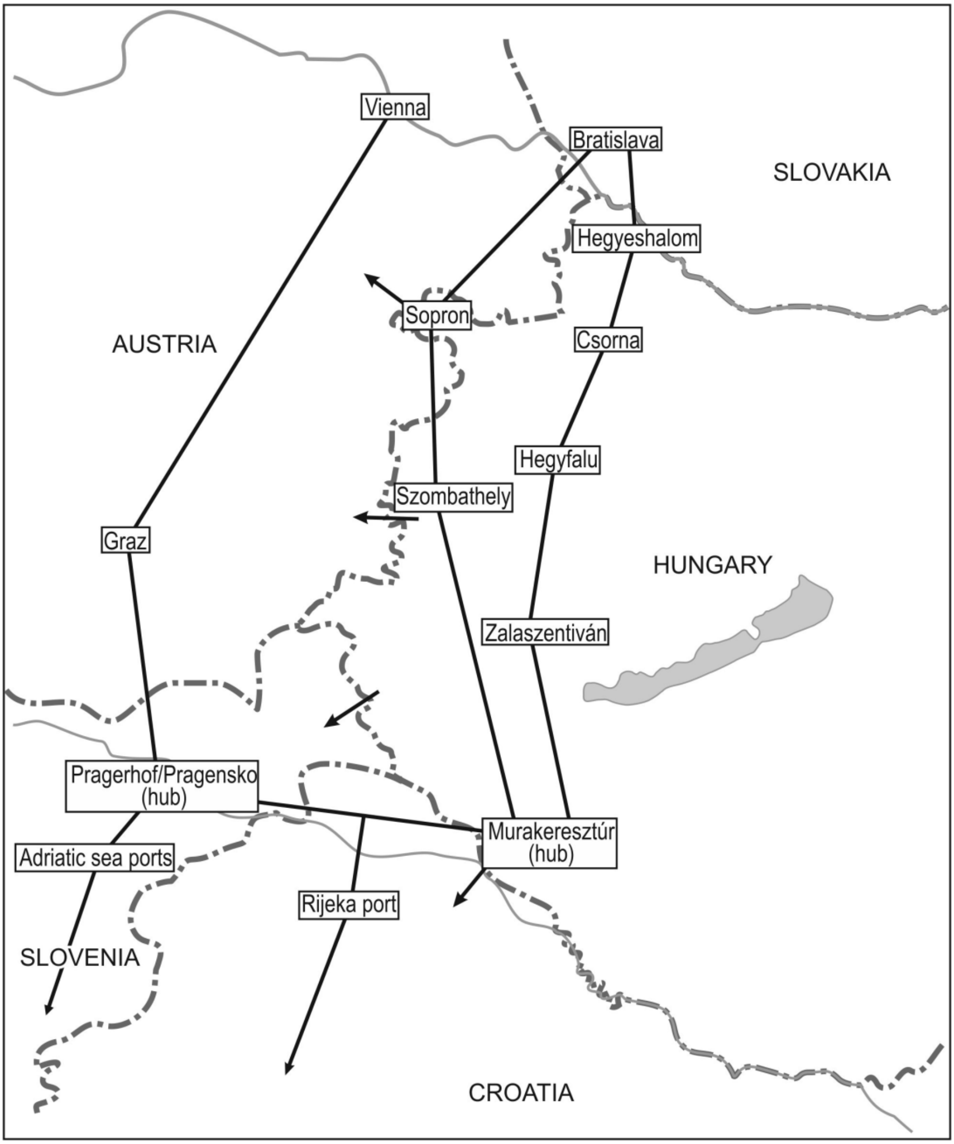
While Hungary is not competitive on the aforementioned line, a logistic chain built on this, coming from the Far East, would be an excellent contribution to strengthening the logistic role of this region in Europe, in accordance with the interests of Austria and Slovakia. Such a situation would lead to the birth of a commodity logistics concentration with an extremely strong attraction. This would in itself have really negative consequence for Hungary.

The handicap of such a situation would be enhanced by the construction of the 560-kilometre long wide gauge railway (www.iho.hu) to Bratislava. As a consequence of this, Hungary (with the exception of the western counties) would find itself on the eastern side of the Central European logistic region *(Figure 9),* outside the European transport connections and in the interest zone of Russia again.

If the wide gauge railway is built in Slovakia, the distribution centre of the goods transport from the Far East and Russia to Europe will be relocated (“moved”) from the Ukrainian hubs to the west, from which the Slovak and Austrian companies will profit. In this case there will be not one single reason for the East–West railway transport to stop anywhere is Hungary. If this Vienna/Bratislava commodity logistics axis is realised, the model of transport network featured in *Figure 3* will be distorted to the detriment of Hungary. The southern line (Adriatic ports, West Balkans) will strongly gravitate towards Vienna. The north line will slightly move towards Bratislava and may divert some of the traffic of the Berlin–Warsaw–Minsk route. Most drastically, the eastern line

Figure 8

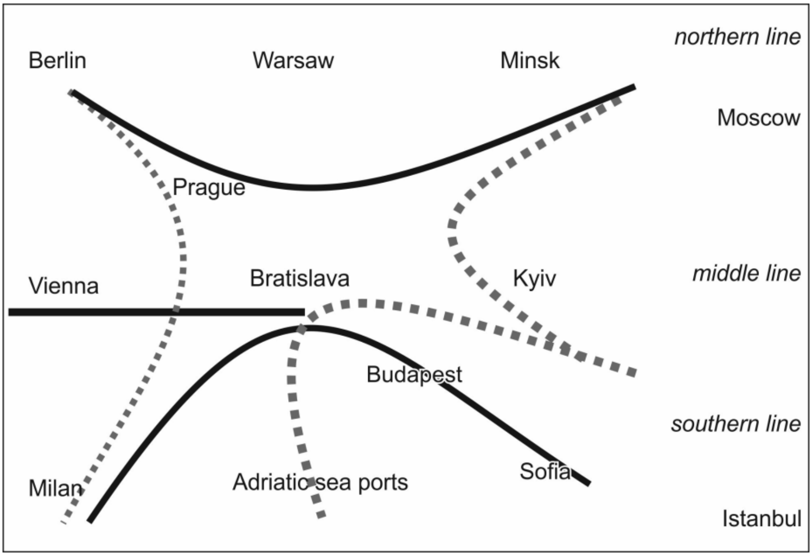
Railway lines and their connections listed in Article 306, Chapter V. of Act No. XXXIII. of 1921



Source: Edited by Tibor Bajor.

Figure 9

Impact of the construction of the Slovakian and Hungarian wide gauge railway



Source: Edited by Tibor Bajor.

would be distorted, as the role of Kyiv would be taken over by Bratislava. In this case, Budapest would have significance equal to that of the Ukrainian ex-distribution centres within the Far Eastern, Russian and European transport system. The importance of Budapest could only increase if significant transport were realised on the TRACECA corridor and that would be diverted toward Bratislava.

It is clear from the initial Figure 6 that the existing network can most reasonably accessed from Moscow in the north and from Istanbul in the south.

The southern TRACECA route version will not be a major accession point in the near future, due to the present Central-Eastern/Caucasian political situation. However, we must be prepared for a changed situation, e.g. by the economic expansion of Kazakhstan *(Figure 10)*.

It is the central, east–west line of the network demonstrated in Figure 1 that is presently running across Hungary. Because of their locations in the TEN-T network, Bratislava and Vienna restrict the possibilities of Budapest *(Figure 11)*. Furthermore, Poland is trying to divert the transit traffic from Kyiv to Hungary at Lviv, and integrate it into the traffic of Corridor VI at Katowice (Perspektivy… 2002). If Hungary does not make determined steps, it will be completely pushed out of the east–west transit traffic.

Corridor X.a (the Zagreb–Maribor–Graz route) allows the bypassing of Hungary in a northwest–southeast direction. From Záhony to Italy, the majority of transportation takes place across Sopron. The traffic across all other border crossing stations is negligible. This is in line with the transport interests of ÖBB and Rail Cargo. Sopron, where cargo shipments are collected and distributed, is a hub of the GYSEV. The Záhony–Hodoš (Slovenia) block train has not met the expectations so far. For the time being, there are negotiations on having approved

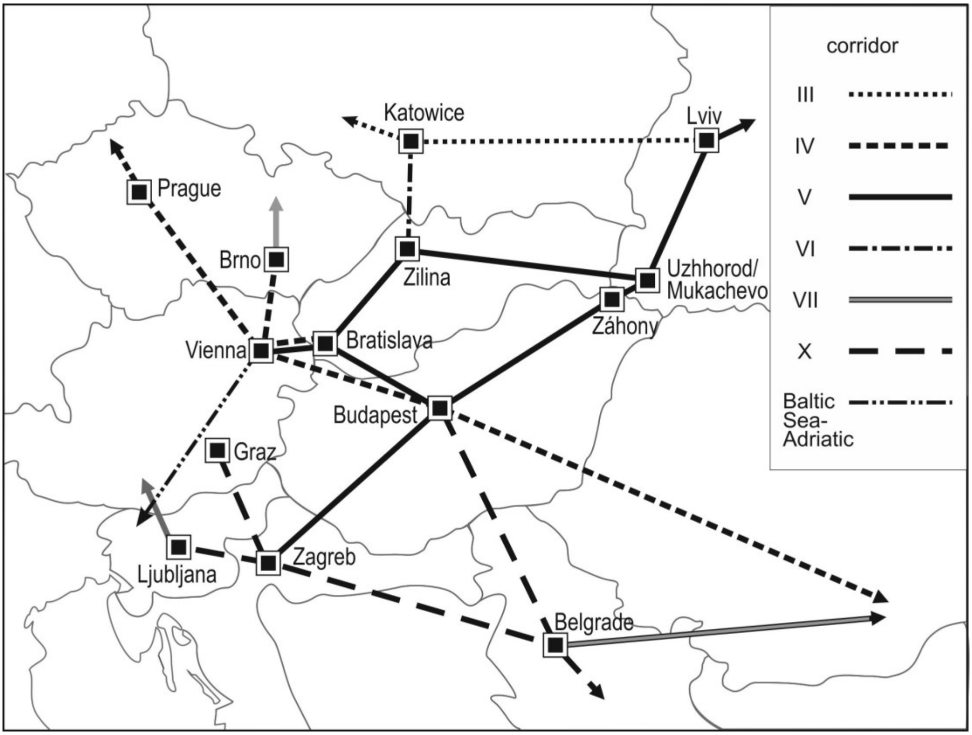
Figure 10

The logistic role of Kazakhstan

Source: Edited by Tibor Bajor.

Figure 11

The TEN-T network in the Carpathian Basin and its region



Source: Edited by Tibor Bajor.

a North–South European transport corridor, linking the Baltic Region to the Adriatic, by the countries concerned (Baltic States, Poland, Slovakia, Austria, Slovenia, Croatia). For this, the Katowice– Žilina and the Vienna–Graz section must be approved as parts of the TEN-T. In practice, the connection between the Baltic Region and the Adriatic Sea is already an operating transport corridor (European Commission 2007). This north–south corridor, however, diverts the Southern Europe–Russia traffic to Austria before reaching Croatia, already.

The best solution for the accession to the axis in the north is Moscow–Minsk–Warsaw–Berlin axis (one of Europe's most important railway lines).

It must be clear now that the amendment of the network system featured above for the favour of Hungary is not an easy task because of the similar efforts of the competitors. Along the ideal line of transport from the Far East to Hungary, there are several states in between that assert their own interests.

Starting from China, the first significant actor and distribution region is Kazakhstan. Already in this country, Hungary must do its best to attract as much of the traffic as possible: on the one hand, by having shipments arriving there with Hungary specified as a destination; on the other hand, by the organisation of direct block trains and the promotion of the opening of "bases". Although it cannot be forecasted precisely as yet when the Asian section of the TRACECA becomes a busy transit route, it should be adequately guaranteed well in advance that Hungary becomes the main destination in Europe.

However, if the *Yekaterinburg–Narvik–Atlantic Ocean–North America semi-global transport chain (Figure 3),* connected to TransSib, is implemented, then a significant part of the shipments from the Far East will not even enter the Central European network. This is against the interests of not only Hungary but also the other countries of Eastern Europe, and even Germany. It takes joint action to counterbalance this grand plan.

The railway on this route runs from the Ural Mountains, from Yekaterinburg to Moscow, but from Chelyabinsk to Kharkiv in Ukraine. If Russia approves the use of the trans-Siberian route, the crowdedness of the Moscow hub could be significantly decreased, but this would also weaken the position of Poland. On the other hand, this line could be joined by the Caucasian region from the south and thereby new partners could show up for the Hungarian foreign trade.

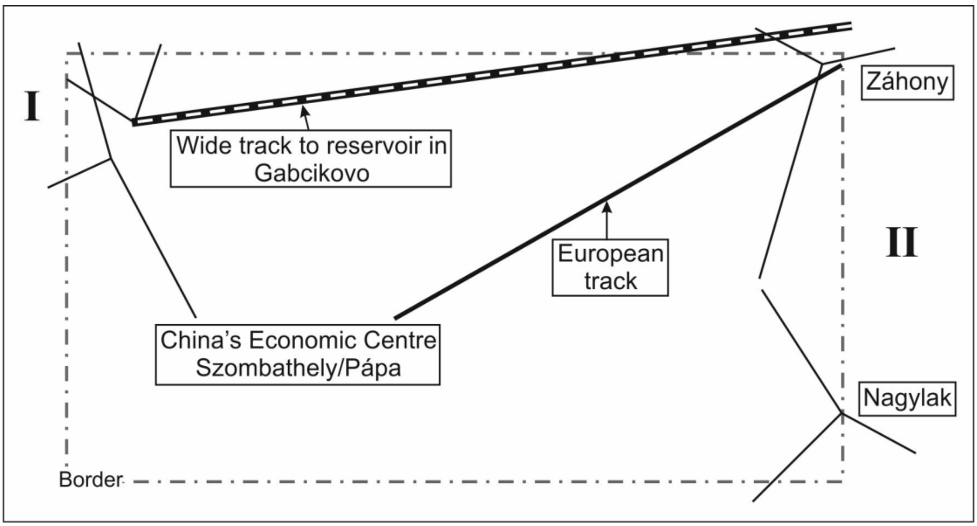
The last large logistic centre, the last large turntable before this line reaches the Eastern European region is Moscow, a gateway of two corridors of the Central European network (II and IX), and the north-eastern destination of the TEN-T network. (If Hungary accepts the recommendation of Russia and proposes that the destination of Corridor V of the TEN-T network should be Yekaterinburg instead of Kyiv, the capital city of Russia will be much less capable of distortion towards Hungary.) The implementation of the Záhony–Moscow "logistic bridge" is unrealistic, because of the excessive turnover of Moscow. Russian initiatives for the omission of Moscow (e.g. the Záhony–Yekaterinburg direct connection) have failed due to the passivity of Hungary.

The Poles, focusing on their own interests, try to attract some of the East–West transit and thereby divert the eastern lines of the network model northwards. These initiatives are disadvantageous for Hungary, because the shipments to South and Southwest Europe would reach their destinations by bypassing Hungary from the west (partly diverted to Corridor VI), through Slovakia (or the Czech Republic/Austria).

The amendment of the network evidently most dangerous for Hungary is the construction of a wide gauge railway, on Slovak and Austrian initiative, from the Ukrainian border to the Bratislava region (or even farther west). This new line would practically isolate Hungary from the centre of the network. *It would be just as dangerous if Hungary constructed on its own territory the Russian wide gauge* *railway,* because this way it would deprive itself of the possibility to become a centre – from the own resources of Hungary –, subordinating the country to the Vienna/Bratislava centre. If Hungary implemented a Chinese logistic centre in the hinterland of a neighbouring centre abroad (e.g. in Vas county or in the Szombathely area), the consequences would be similar. (Not to mention that the construction of a new commercial airport there cannot be justified with any argument, given a number of unutilised airports, suitable for the reception of cargo flights, all over Hungary.) Hungary, nevertheless, must pay attention to the “funnel effect”: where and in what direction the mouth of the funnel will be opened *(Figure 12).* In Version I of the east to west transportation, goods run across Hungary without stopping and meet the Slovak-Austrian logistic system at the western border, with traffic exerting its impacts in that region. In Version II, shipments are stopped on entering Hungary and will have impacts for the whole territory of the country. For Hungary it is evidently Version II that is desirable.

Figure 12

The “funnel effect” in Hungary



Source: Edited by Tibor Bajor.

7.4 Possible means of decreasing or preventing of network distortions/threats dangerous for Hungary

By adequate economic and organisational measures, Hungary may be able to create a network meeting its own expectations, advantageous for the country.

The final European location of the exchange of Russian and Far East goods has not been found yet. Countries suitable for this role are afraid of one or the other foreign trade partner, on the basis of their historical experiences. They only want to play a mediating role if the three concerned partners implement their foreign trade through them, using their mediation services. Of course this is mutually unacceptable for the three trading partners. A *country,* on the other hand, that is the *first to guarantee a joint location for all three partners* with the same conditions (simultaneously to not blocking the direct relations among the partners) and does not come up with unrealistic economic claims will probably have an indispensable position in the network. Russia has had intentions to implement the European–Russian trade through Hungary three times so far (in 1940, 1945 and 2003).

The presence of the market in itself is necessary but not sufficient condition. In accordance with the transportation policy of the EU, all railway transportation companies (registered and operating with permission in the Union) must be provided the same access to the use of the tracks. If Hungary, at the entrance point of the Union's network, founds a Hungarian–Russian–Chinese joint railway transportation venture (maybe with Austrian, Ukrainian or German participation), providing the necessary background for this, then the country can become a centre of not only the Central European network but also of the Far East–Europe transcontinental network. The Hungarian effort thus shrinks the eastern side of the Central European network and moves the location of the centre eastward. In this case *Hungary can become an intercontinental transport hub, one of the main economic activities of which is transport logistics and commercial logistics*.

The Hungarian government is unable on its own two break out of the forced position in the European–Asian (within that: Central European) transport network. This causes considerable economic damages for the country. Since the 1990s, when the role of Záhony was consciously depreciated, for political considerations, the intercontinental transit routes have been gradually moving away form Hungary. The former transport logistical roles of the Hungarian centres are gradually taken over by Vienna and Bratislava. (The positions of Budapest have worsened recently even in air transport against the above two capital cities.) This makes the revision and amendment of the government decisions of the recent years necessary. It is a vested interest of Hungary to provide Hungarian transport companies with a direct access to the sea navigation routes, and also to divert the Asian and Russian transport routes towards Hungary, parallel to the provision of direct economic relations. In cooperation with the Austrian ÖBB, a railway transportation company should be registered in Hungary, together with the railway companies of Russia, China and other Far East countries. The EU regulations would entitle such a company to carry out transportation services with its own railway vehicles in the whole of Europe. This would safeguard, among other things, interoperability.

If the attempt to change the present position of Hungary fails, then the "New Silk Road", becoming busy in the future, will run far from the country, and the destination of the East-Central European section will be Vienna.

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