Logistics Processes and Motorways of the Sea II
in Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan, Ukraine, Uzbekistan

LOGMOS Master Plan – Annex 4

Rail Sector Overview

October 2013
TABLE OF CONTENTS

RAIL SECTOR OVERVIEW .............................................................................................................. 2

1 RAILWAY COMPANIES ............................................................................................................. 3
   1.1 CORPORATE STATUS, OPERATIONAL STRUCTURE, FINANCIAL POSITION ......................... 3

2 EXISTING INFRASTRUCTURE AND ROLLING STOCK .................................................................. 10
   2.1 RAIL INFRASTRUCTURE ......................................................................................................... 10
   2.2 ROLLING STOCK ...................................................................................................................... 11

3 NATIONAL NETWORKS, REGIONAL, INTERNATIONAL AND TRACECA RAIL CORRIDORS .. 15
   3.1 NATIONAL NETWORKS ............................................................................................................. 15
   3.2 INTERNATIONAL AND REGIONAL RAIL CORRIDORS ............................................................... 15
   3.3 TRACECA AND COMPETING RAIL CORRIDORS .................................................................... 16

4 PHYSICAL BARRIERS .................................................................................................................. 23

5 REGULATORY AND OTHER NON-PHYSICAL BARRIERS .......................................................... 27

6 TARIFF POLICIES ...................................................................................................................... 31

7 ONGOING PLANS, PROJECTS .................................................................................................... 33

8 SOURCES ...................................................................................................................................... 48

LIST OF TABLES

Table 1: Rail Infrastructure Main Parameters by Beneficiary Country .............................................. 10
Table 2: Number of Wagons Transported by Rail-ferries (Maritime Report, 2013) ......................... 17

LIST OF FIGURES

Figure 1: Construction of the New 217 m-long, 43 m-high Bridge (in Parallel to the Old 1898-built Bridge) across the Zamanlu Gorge ............................................................................................. 4
Figure 2: Trans-Siberian Railway ..................................................................................................... 19
Figure 3: Marmaray Tunnel ............................................................................................................. 26
Figure 4: OTIF (CIM) and OSJD (SMGS) Members .......................................................................... 29
Figure 5: Silk Wind in Kazakhstan .................................................................................................. 34
Figure 6: BTK Outlay ...................................................................................................................... 35
Figure 7: Armenia Railway Network ................................................................................................ 38
Figure 8: Caucasus Railway Network .............................................................................................. 39
Figure 9: Overhaul of the Baku – Beyuk-Kyasik Railway Line ............................................................ 41
Figure 10: North-South Transnational Rail Corridor ......................................................................... 42
Figure 11: Route of the Intended Railway Corridor China – Kyrgyzstan – Uzbekistan ....................... 44
RAIL SECTOR OVERVIEW

Railways are one of the key components of the transport system in TRACECA member-states. After pipelines, railway remains the main mode for land transport and delivery of bulk cargoes in large volumes over medium and long distances.

All TRACECA countries have a historically deeply-rooted rail transport culture, which is easily explained considering the low density and uneven distribution of the population, the poor condition of the road networks, the relative cheapness of railway transport and the huge distances that occasionally exist between human settlements (e.g. in Kazakhstan). The significance of this mode of transport is obviously even higher for land-locked and mountainous countries. The historical development of transport in TRACECA countries determined, to a large extent, the level and dynamics of the countries’ global development.

The TRACECA Corridor originates in Eastern Europe (Bulgaria, Romania, Moldova and Ukraine) and from Turkey. The route then travels through the Black Sea to the ports of Poti and Batumi in Georgia and follows the transport networks of the South Caucasus countries. From Azerbaijan, using the Caspian Sea rail-ferries (Baku-Turkmenbashi, Baku-Aktau) the TRACECA route connects to the railway systems of Turkmenistan and Kazakhstan, whose transport grids are connected to Uzbekistan, Kyrgyzstan and Tajikistan and extend to the borders of China and Afghanistan.

The railway network of Turkey, which is not yet linked directly with the former CIS railway network, will soon join it in the East, when the railway line Kars-Tbilisi opens and provides uninterrupted access by sea to the European network via the ‘Marmaray’ tunnel.

The estimate, calculated by the transport model developed within the EU-funded TRACECA IDEA Technical Assistance project in 2010, yields a railway share in the market of long distance freight transport ranging from 37% of the ton-km total for energy products, to 95% for raw materials. According to future projections, the accessibility of the TRACECA region in the next twenty years will continue to depend on how the railway networks and railway services affect regional competitiveness in terms of trade and costs of exported and imported goods.

In most TRACECA countries, after about 20 years of low investment in railways, there is a great need for investment in rehabilitation, up-grading, modernisation and expansion of the existing infrastructure, rolling stock and operational systems. These investments should bring the networks to higher technical levels entailing a significantly improved quality of service and thus ensuring a sustainable operation of railway transport in the future.

Re-organizing railway administrations and national companies in order they no longer perform their duties as mere public-service providers but in a business-like manner with a customer-oriented approach is another daunting challenge in most TRACECA countries as it often implies drastic and painful measures at a high social cost. The corollary target of such policies must also be the provision of free and fair access to market for private operators. And last but not least transnational cooperation must develop much wider to improve interconnectivity and interoperability not only between railway companies and systems but also between all key players in the border crossing processes, first and foremost the Custom Houses, harmonize tariff, documentation and service policies, work out communication systems for advance and real-time exchange of information relying on modern IT tools and means, enabling the provision to the trade of real door-to-door services and thus fostering the implementation of the supply chain concept at regional level along the whole Corridor.
1 RAILWAY COMPANIES

1.1 Corporate Status, Operational Structure, Financial Position

Railway transport in TRACECA member states is currently in a transitional phase, characterised by reforms, restructuring and partial privatisation of railway infrastructure (such as container terminals in Armenia, Georgia and Kazakhstan) and rolling stock in some countries (Kazakhstan, Ukraine). For rolling stock, privatisation means partly selling publicly owned rolling stock to private owners and partly transferring fleet management from public railway inventory to privately managed railway stock. Historically, the national railway administrations of the former Soviet republics were state-owned enterprises operating under the Ministry of Railway Communications of the USSR. To date, most of them became closed JSC with 100% state capital operating under national transport ministries (or other public authorities). There is only one exception: the Armenian railway operator ‘South Caucasian Railway’ (SCR), which was created in accordance with the 30-year¹ Concession Agreement signed by ‘RZD’ (Russia) and the Republic of Armenia in 2008 and is the sole fully private railway operator among all TRACECA countries.

A single model of rail infrastructure and operations management in the space of ‘1520² space’ does not exist. Each state chooses its own scheme, based on external and internal factors.

**Armenia:**

The management and 4,300 staff³ of the entire railway infrastructure of the Republic of Armenia was transferred to SCR, the rolling stock being carried as an asset by the company. One of the key provisions of the Concession Agreement is investment in the rehabilitation of Armenia’s railway infrastructure, rolling stock and new technologies. SCR is supposed to invest for these purposes a total amount of USD 572 M.

The investment volume aimed at the modernisation of the railway infrastructure and rolling stock exceeded USD 220 M in 2008-2012. During this period over 300 km tracks⁴, 140 km of power lines and a number of artificial and technical structures were repaired. As a result the technical average speed on Armenian railroads increased from 27.5 to 37 km per hour while the number of derailing fell from 420 in 2008 to 5 in 2012.

In 2012 only the overhaul and/or construction works of 3 major rail bridges (Zamanlinsky, Satani Kamur and the bridge on the stretch Kober – Tumanyan) were completed.

SCR investment budget for 2013 is DRM 7.5 bn (about USD 18.374 M), a 20% increase compared with 2012. It focuses on the introduction of new technologies to decrease the maintenance expenses of the rolling stock by 50%, improve automation and rehabilitate another three bridges.

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¹ With a right to prolong the management term for another 10 years.
² As a reference to the broad Russian gauge of 1,520 mm as opposed to the Western European one of 1,435 mm.
³ SCR ranks among the top three largest employers in Armenia.
⁴ Out of a total 1.328,6 network length.
In 2011, a Directorate for Infrastructure Management was created within SCR and entrusted with the operation and modernisation of the railway infrastructure, including optimising the cost of infrastructure management. Armenia acceded to the Intergovernmental Organisation for International Carriage by Rail (OTIF) in July 2011 and is a member of CIT.

For the revitalization of the freight market and attraction of new freight volumes a Centre for Transport Services was established in 2011. The goal is to meet the expectations of clients better and, in particular, offer freight forwarding on a ‘door-to-door’ basis and provide an increased range of logistics and other services related to the transportation of containerized and non-containerized goods using an on-line ‘single window’ concept.

**Azerbaijan:**

The state owned JSC ‘ADY’ comprises three operational divisions based in Baku, Ganja and Nakhichevan, with the general management located in Baku. The ‘State Programme for the development of the railway transport system 2010-2014’ with an overall budget of USD 1.5 bn aims at transforming ADY into a financially self-sustainable operation covering all its costs (including infrastructure, maintenance and traction) by revenues, while improving its operational efficiency and increasing transparency of the railway sector by introducing International Financial Reporting Standards and profit centres (passenger/freight).

The separation of operations and infrastructure management is under discussion, but is far from completion. A draft railway law proposes an EU type railway structure creating separate companies to manage railway infrastructure and operate freight and passenger services. This may pave the way for the participation of the private sector in railway operations, which in turn makes it possible to improve the competitiveness of this mode and strengthen the capitalisation of the industry.

ADY is a member of CIT. Since early 2013 ADY has been implementing a project for introducing a computerized accounting system compliant with the IFRS.

**Georgia:**

Georgian Railway (GR) was restructured in 2004 as a state-owned JSC. It is in charge of both the management and maintenance of the rail infrastructure, as well as all operations of passenger and freight services. The general manager of GR is subordinated to a supervisory board. GR is a vertically-integrated operator with a statutory monopoly and, at the same time,

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5 SCR boasts a 34% share of the total Armenian freight market. SCR carried 2,050,000 t of cargo between January and August 2013 (9.5% less than during the same period in 2012), about equally distributed between domestic traffic (1,024,300 t=-4.8%) and international trade (311,000 t for import =+1.9% and 714,700 t=-19.2% for imports).
deregulated tariff-setting. As part of a modernisation programme, 2,445 employees were laid off, while wages for remaining employees were increased. In a truly market-oriented approach, tariffs for freight transport were lowered, whilst modernised. In 2009, GR established a subsidiary, Georgian Railway TransContainer Ltd (GRTC) – the name meantime changed to Trans Caucasus Terminals LLC - to take care of container operations and, more specifically, of the management of the railway container terminals. In 2011 GRTC took over all container operations (including rail transport, pre- and post carriages, logistics and storage) from GR’s previous sub-contractor, InterTrans.

Georgia (an OSJD member-state since the mid-90s) acceded to OTIF in May 2012. GR aims to adopt ISO 9001 standards and introduce harmonisation with EU directives.

GR’s privatisation attempts in the early 2000’s proved unsuccessful. Nonetheless, the Georgian government still intends to privatise GR, separating the ownership/management of infrastructure from the operation of passenger and freight services. The state-owned JSC Partnership Fund, the 100% shareholder in some of the major Georgian state enterprises including GR, but seems to be as much a political instrument as an economic tool, made changes in the leadership of Georgian Railway after the October 2012 parliamentary election. Earlier that year, GR, one of the country’s largest taxpayers and employers, had planned an Initial Public Offering of up to 25% of its shares on the London Stock Exchange, but the operation was postponed the new government citing ‘challenging capital market conditions’.

Kazakhstan:

The Kazakh railways are managed by the national JSC ‘Kazakhstan Temir Zholy’ (KTZ) which was created in 2002 in order to improve management and accounting methods. The sole shareholder of the company is the National Fund ‘Samruk-Kazyna’, itself 100% owned by the Republic of Kazakhstan. The Fund manages KTZ through the Board of Directors, without interfering in operational work. The activities of KTZ are controlled by the Ministry of Transport and Communications and the State Agency for Regulation of Natural Monopolies.

KTZ is charged with the management and maintenance of the rail infrastructure, as well as operations of passenger and freight services. The state retains ownership of the railway’s infrastructure, 50% of the freight rolling stock and almost all locomotives.

KTZ acts as a holding company, with 26 wholly-owned subsidiaries providing key functions such as the management of passenger and freight services, infrastructure maintenance, traction and rolling stock provision and maintenance and telecommunications. Traction is under the KTZ subsidiary ‘Lokomotiv’, which was given the stock of locomotives. Wagons are partly sold to private companies and partly transferred to KTZ subsidiaries. Repair and maintenance facilities are performed by either a State JSC or by an already privatised workshop. Major terminals were transferred to ‘Kedentransservice’, 67% of which has been owned since 2011 by the Russian company TransContainer, with a minority share of KTZ. Containers and related operations were transferred to ‘Kaztransservice’ (KTS). The Government of Kazakhstan is in the process of creating KTZ logistics, based on the same patterns that were developed in Russia and in Germany.

While the state intends to retain ownership of the railway’s assets, competition is foreseen for the future in the freight sector. There are plans to establish a dedicated freight transport company as well as another for passenger transportation. Also, a special infrastructure unit will be created within KTZ by 2014, which would be able to set up tariffs on its own for the use of

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6 An RZD subsidiary listed on the London Stock Exchange and the leader of container rail transport in Russia.
KTZ carries two times more freight on rail than Deutsche Bahn, its freight turnover is about USD 3 bn and its market share is more than 80% in ton-km. Passenger services represent less than 10% of total KTZ turnover, but this figure has improved over the past ten years as trains irrigate the country better and provide enhanced services of higher quality.

In 2013, KTZ announced their plan of creating a national multimodal operator on the base of KTZ, which shall combine rail transport, port infrastructure and sea transport, trucking and terminal network. Well-known international operators will manage the major transport and logistics facilities (Dubai Port World is in talks with the GoK for managing Aktau seaport and the FEZ ‘Khorgos - Eastern Gate’ while the airport holding of 11 airports will possibly be managed by Swissport). KTZ is accordingly scheduling to perform a re-branding by the end of 2013.

In 2012 KTZ took over the management of the Khorgos International Centre of Boundary Cooperation on the Southern tip of the Chinese-Kazakh border. The operator plans to create there the ‘Khorgos’ industrial and logistics hub, providing an intermodal node between this free economic zone, the 293 km railway line Zhetygen - Korgas as well as the road connection between Western Europe and Western China.

In 2013, the JSC Aktau International Commercial Seaport stock was transferred into the trust management of KTZ in order to hasten its expansion in competition with the port of Turkmenbashi in Turkmenistan.

The new national multimodal operator will be part of the United Transport and Logistics Company (OTLC) of the Customs Union. The respective agreement has been signed in June 2013 between RZD, KTZ and Belarusian Railways.

OTLC is created as a joint stock company. After obtaining the consent of the respective state bodies, shares or stakes in rolling stock operators and terminals (TransContainer, Kedentransservice, Kaztransservice, etc.), transport and logistics companies (RZD-Logistics), as well as container wagons, containers and property of the rail freight terminals at Zabaykalsk (Russia), Dostyk (Kazakhstan), Altynkol (Kazakhstan), and Brest-Severny (Belarus) railway stations will be transferred to the capital stock of the new company.

According to the business plan, the turnover of OTLC will exceed 4 M TEU by 2020. To ensure the growth of domestic and international transportation, including transit, OTLC will invest in rolling stock, containers, terminals, and IT-infrastructure. The total investment is budgeted at USD 6.2 bn by 2020. Capital expenditures will be made at the expense of OTLC’s own funds and loans, without any additional resources from its founders.

**Kyrgyzstan:**

‘Kyrgyz Temir Zholy’ (KTJ) is the national railway developer of Kyrgyzstan and provides cargo and passenger services. KTJ is subordinated to the Ministry of Transport, which has just begun to form its structure after many changes of management. In early 2012, the foreign liability of KTJ in relation to Russian Railways and Kazakh KTZ amounted to USD 19.04 M.

The share of rail freight transport in total freight volume in Kyrgyzstan is only about 5%; the dominant transport mode is road transport. The Northern and Southern parts of the country are not connected by railways. Lack of finance and the complex mountain landscape of the country did not allow a connection between the two parts of the country by rail until now. There are high expectations of the China - Kyrgyzstan - Uzbekistan (hereinafter ‘CKU’) railway construction project described further below.
Moldova:
The state enterprise ‘Calea Ferată din Moldova’ (CFM) focuses on reviving the railway transport system in the country. Plans include increasing railway traffic speed, the modernisation of the company’s rolling stock and the renewal of the railway passenger coaches used on international routes (passenger transport on international routes is the only segment currently profitable). In 2013 plans were laid and started being implemented for restructuring CFM. Moldovan Authorities consider establishing three companies: the railway infrastructure manager, the national railway passenger transport operator and the railway freight transport operator. Serious steps have already been taken: almost complete change of management, separation of infrastructure from operations, separation of freight from passenger business, introduction of electronic accounting corresponding to international standards, tackling the issue of excess work force (a EU-grant of EUR 5 M has been received for that specific purpose), etc. The work is going on, first results should be visible in 2014. The Company plans to open the rail transport market to private operators in the next five years and is currently working on a total restructuring and externalisation of the services considered non-profitable.

Political problems are still the reason why the direct link between Moldova and Ukraine via Transnistria is not in operation for freight services. Moreover, changes in the economic flows between Ukraine/Kazakhstan and Romania for the steel industry, based in Galati, explain the decrease of freight operations through Moldova.

Tajikistan:
The state owned company ‘Tajik Railways’ was established in 1994 and is the sole national rail operator. Tajik Railways is under a process of self-restructuration. The policy of the state is aimed at liberalising the railway market and conditions allowing private operators to emerge. Tajikistan plans to create a separate infrastructure company by 2018, which would optimise the cost of upgrading railway tracks by eliminating cross-subsidies that are hampering equal access to the railway network for all market players. Currently, the level of investment into the rail infrastructure of the country is very low, despite the fact that the tariffs are set by the Company itself.

Turkmenistan:
Turkmens Railways (TDY) is the state enterprise that owns and operates the railway network. According to the law ‘On Railway Transport’, the Ministry of Railway Transport remains the main provider of railway transportation services in the country. The organisation of the railway administration makes it uncertain to develop commercial relations due to its bureaucratic structure, but an in-depth reform of the management system is taking place and the government is aware of the benefits of transit development through the country. New lines are under construction to improve the possibility for transit development in the north-south direction.

Uzbekistan:
The state JSC ‘Uzbekistan Temir Yullari’ (UTY) was founded in 1994 on the basis of the regional section of the former Soviet Central Asian Railways. Local and foreign private rail freight forwarders are working exclusively through appropriate divisions of UTY that specialise in the transportation of all kinds of bulk (solid and liquid) or packed cargoes, including containers. UTY is subordinated to the Cabinet of Ministers of Uzbekistan and its general director is appointed by the President of the Country.

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7 The freight volume carried fell from 3,655 to 927.1 M tkm between 2006 and 2010. The drop was especially sharp in transit cargo flows, which decreased by nearly 10 times (2,536 to 284.6 M tkm).
There is no separation between freight and passenger transport operations and management of infrastructure, a step that has been long requested by donors. Political considerations have led to unclear priority setting and the involvement of UTY in the financing and implementation of public non-railway-related projects over the past years has not always been fully based on commercial prospects. This largely erased the benefits of substantial structural changes. Freight transportation is still able to cross-subsidise the passenger traffic (tariffs are regulated by the government), while the maintenance of the network including its seldom used segments, entails a serious financial burden depriving UTY of flexibility in their tariff-policy. The state-owned UTY has been exempted from privatisation.

**Ukraine:**

The State Administration of Railway Transport of Ukraine ‘Ukrzaliznytsia’ (UZ) was established in 1991 to centralise management of the country’s rail network after Ukraine declared independence. The enabling legislation transferred control of 6 regional companies to UZ. At present, UZ combines both public administration functions and those of a commercial operator. It monitors and manages the activities of the regional railways and oversees their operational and financial performance. However, they are still directly owned by the state and technically are subsidiaries of UZ, controlling the Ukrainian railway assets.

UZ carries as much freight as the western EU-15 countries\(^8\) and as many passengers as the central and eastern EU-10 countries.

UZ, a monopoly that controls the vast majority of the railroad transportation in Ukraine, reportedly plans to invest more than USD 1 bn in the modernisation of its stock in 2013. At the same time, UZ announced that it does not have enough funds to implement the project and hopes for state support. This is due to the fact that its activities have been unprofitable in recent years. For example, losses from passenger traffic made up approximately USD 977 M in 2012 as no financial compensation for Public Service Obligations (PSOs) is paid by public authorities to UZ or to regional railway companies. In such a context, profits from the freight activity are just financing losses of the unprofitable passenger business, and are not used to invest in the renewal of assets necessary for the freight business.

Since the 2010 elections, new proposals for partial privatisation of UZ have been brought forward.

In March 2012 the President of Ukraine signed a law that paved the way for the privatisation of hundreds of state-owned companies previously considered as strategic assets. According to this law, the new rail entity will be created as a public JSC with 100% of the shares owned by the state through the merger of the State Rail Transport Administration, Ukrzaliznytsia, and public railway enterprises, institutions, and organisations. In addition, the company’s charter capital will include shares and stakes owned by the state in companies created with the participation of railway transport enterprises. The law on the specifics of the creation of a state JSC of public railway transport provides that the railway infrastructure is not to be transferred to the charter capital of that company, while 100% of its shares will be in state ownership.

Under the plan presented to Parliament, UZ would be restructured as a JSC by 2015. The infrastructure and traction would remain under state control, while the six regional companies would be merged into a single legal entity. The basic infrastructure department is meant to enjoy financial autonomy.

At the end of 2011 and beginning of 2012, the rolling stock was transferred to state owned entities within the UZ structure and started being operated as private wagons and no longer as

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\(^8\) The 15 countries forming the EU before the enlargement to Eastern former socialist republics.
inventory wagon fleet. The badly-regulated process took an unduly long time and seriously affected the operations of UZ's customers.

Later the stock could be handed over to private companies responsible for investing in renewals. The government of Ukraine is considering the possibility of granting permission to private companies to start railway passenger transportations within the country.

UZ is designing a new legislative base for the attraction of private investors to the development of the national railway infrastructure involving the adoption of a compensation mechanism to private investors for their investments in the development of Ukraine's public railways. Respective amendments to the Ukrainian law ‘On Railway Transport’ are expected to be finally approved in October 2013.
2 EXISTING INFRASTRUCTURE AND ROLLING STOCK

2.1 Rail Infrastructure

Although some countries have a rather comprehensive railway network the rail freight traffic declined with the fall of USSR. The main reasons were a dramatic decrease in rail-based industries, an improving road network and strong competition from the trucking industry.

The condition of the infrastructure in the majority of countries is poor and characterised by a high level of deterioration. For more than 20 years after the countries gained independence investments in the railways remained at a very low level which resulted in poor maintenance and rehabilitation of infrastructure sections. Additionally, if rolling stock is not renewed timely and properly the general performance of the railway transport in terms of cost, lead time and safety are heavily impacted. Freight train speeds vary from 60 to 80 km/h, with restrictions of 20-40 km/h on some sections within particular countries. Currently all TRACECA member states are taking steps towards reforming their railway sector, some being already quite far into the process.

The liberalisation of access to railway infrastructure has been slow, but is now in progress. As already noted, in most countries the separation between infrastructure and freight and passenger operations within the national railway companies is taking place or is in the plans.

In the reform process, infrastructure management and operations are initially designed preserving most of the natural monopoly status. Therefore, train paths allocation, access to the terminals and infrastructure charging are fully dependent on the national operator. In most countries there is no railway regulatory body and safety functions still rest fully with the national monopoly infrastructure manager and service provider. However, some of the countries have plans to open access for the freight and passenger operations to the private sector.

The railway infrastructure characteristics of the respective countries are summarised in Table 1 below.

The railway networks are quite dense and, with few exceptions, electrified to a great extent. All TRACECA countries belong to the so called ‘1520 space’ (Russian gauge standard), but in Ukraine and Moldova there exist some sections in European gauge standard9. Such tracks built to standard gauge exist in Poland, Slovakia and Romania where they were laid to facilitate trade in relation with the steel industry in Katowice, Kosice, and Galati. These railway stations in Poland and Slovakia are now the ending/starting points of container block trains into the CIS. The railways of Kyrgyzstan, Moldova, Tajikistan, Turkmenistan and Uzbekistan are still not electrified, though electrification projects are under way. The electrification systems vary from 3 kV DC to 25 kV AC – 50 Hz.

<table>
<thead>
<tr>
<th>Country</th>
<th>Total rail length, km</th>
<th>Double track, km</th>
<th>Electrified, km</th>
<th>Electrification system</th>
<th>Gauge, mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Azerbaijan</td>
<td>2,929.4</td>
<td>804.7</td>
<td>1,271.4</td>
<td>3 kV DC</td>
<td>1,520</td>
</tr>
<tr>
<td>Armenia</td>
<td>1,328.6</td>
<td>n/a</td>
<td>845.0</td>
<td>3 kV DC</td>
<td>1,520</td>
</tr>
<tr>
<td>Georgia</td>
<td>1,619.7</td>
<td>293.3</td>
<td>1,523.6</td>
<td>3 kV DC</td>
<td>1,520 (37.4 km – 912)</td>
</tr>
</tbody>
</table>

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9 Two proposed railway corridors, Tajikistan – Afghanistan - Turkmenistan and China – Kyrgyzstan – Uzbekistan – Iran - Afghanistan, are going to be constructed to the narrow-gauge European standard.
2.2 Rolling Stock

Many years of regulated tariffs have left the countries’ rail network and rolling stock significantly under-financed. In most of the countries, the current fleet has a service life exceeding the target average of 30 years. One immediate consequence of this situation is much higher maintenance costs.

Following the Russian example, common stock wagon fleets are no longer available in the most important railways of the CIS countries. Public inventory wagon fleets are now operated as privately owned wagons fleets. This change of status caused (and still causes) problems, especially in ports and at border stations where transshipment is necessary, e.g. the border stations between Kazakhstan and China.

Generally, it appears that countries are experiencing a vast shortage of railway wagons and container platforms not only because of the wagons' condition and age, but also due to the change of status with the wagons. Nevertheless, all TRACECA countries are taking steps towards rolling stock renewal as well as upgrading and repair of the existing fleet.

**Armenia:**

From 2008 to 2012, 80% of the rolling stock was repaired, including 18 electric locomotives VL-10, 800 cargo and 27 passenger cars. SCR also purchased 60 cars, 10 diesel locomotives, 8 electric locomotives and 21 maintenance vehicles. SCR is committed to supporting local manufacturers and developing cooperation with Armenian companies. In 2012, two major projects for the reconstruction and re-organization of the locomotive and wagon depot in Gyumri were launched allowing SCR to carry out the full range of maintenance and repair of rolling stock with its own means without calling on sub-contractors thus drastically reducing the maintenance bill.

**Azerbaijan:**

The locomotive fleet has been heavily-used and is technically obsolete: about two thirds of the fleet requires replacement and modernisation. As of 2010, ADY had 204 two-section electric locomotives in its fleet, of which 96 were in active use (about half of them over 15 years old). The remaining units were VL-8 locomotives of more than 35 years of age. The VL-8 locomotives are beyond their design life and are experiencing a high level of failures: roughly one failure per locomotive per month. As a consequence, the weight of the trains is reduced to 2,800 t (instead of 3,500). These locomotives need to be rehabilitated or replaced soon. ADY’s freight wagon fleet is also ageing. ADY has more wagons in aggregate than it needs, with 7,771 wagons in the working fleet, another 10,162 wagons that are usable and spare and a further 5,655 wagons
that could be rehabilitated if they were needed. ADY, however, anticipates shortages of semi-wagons and tank wagons in the near future.

As far as the international freight carriage is concerned, the Azerbaijan Railways, in line with the 2010-2014 State Development Programme for Railways, is carrying out the reconstruction and modernisation of infrastructure, as well as the upgrading of the rolling stock. It is envisaged that in the initial phase the passenger train speed will be increased up to 140 km/h. For the sake of enhancing the train handling capacity on the main double-track line of the TRACECA railway route, a single track railway bridge Poylu – Salogly is being reconstructed into a double track bridge.

In relation with the Kars – Tbilisi – Baku Project the railway lines in Azerbaijan are being modernised to the latest technology and brand new and fast rail stock is under acquisition. As part of the renovation of rolling stock, ADY now plans to buy 100 new passenger carriages as well as 50 locomotives for cargo transport. A tender for supply of 12 multi-system electric locomotives for passenger transport was placed in August 2013. As Azerbaijan lacks maintenance facilities, rail cars are sent for refurbishment abroad. As of September 2013 ADY had received back 52 out of the 76 cars sent for overhaul to Ukraine and Russia.

**Georgia:**

GR has 308 locomotives, of which 174 are electric and 134 diesel. In addition, it has 11,711 freight cars including 1,205 platforms and 50 container cars. Many of these locomotives and wagons are in obsolete condition and their operation is time-consuming (e.g. if a regular change of locomotives and wagons is required, the speed of the trains is reduced). The maximum train mass allowed on the Georgian railways varies from 2,800 to 3,000 t. Within the investment programme providing for a complete upgrade of passenger rolling stock, China South Locomotive and Rolling Stock (CSR) branch Nanjing Puzhen Rolling Stock Co. won the second contract for five EMUs (Electrical Multiple Units) from GR in 2011 (the 1st one was for 3 EMU). Another major Chinese electric locomotive manufacturer and CSR affiliate, CSR Zhuzhou Electric Locomotive Co., won a bid to export 40 bullet train locomotives to Georgia.

**Kazakhstan:**

In 2010 the working fleet of wagons in Kazakhstan was around 96,409, of which 43,305 were privately-owned. KTZ owns around 1,000 container wagons, but they are always in short supply in spite of the fact that around 1,000 additional foreign container wagons are circulating permanently on the Kazakh territory. More than 20,000 new wagons were ordered and received in 2011 and 2012 to renew the KTZ publicly owned wagon fleet on the basis of EBRD loans and bonds emissions on the financial markets. Kazakhstan will need up to 53,000 new freight wagons by 2020, due to significant deterioration and forthcoming decommissioning of the country’s current railcar fleet. Currently the annual production of rail cars in the country is estimated at about 2000 units, with more than 85% produced by the state-owned Kazakhstan Wagon Company. For passenger business, KTZ developed new services using TALGO rolling stock, produced and maintained in Astana in a new factory and workshop operated as a joint venture KTZ/TALGO called TULPAR TALGO, on the basis of a 15 year-contract between KTZ and TALGO. KTZ also received new DMU’s rolling stock produced in Poland to be operated on domestic services between Turkestan and Shymkent. A project for a totally new high speed line between Almaty and Astana is under discussion. In December 2012, KTZ, French Alstom and Russian Transmashholding (TMH) railway equipment manufacturers inaugurated their joint new plant for the production of electric locomotives in Astana. An agreement has been signed in Astana by GE Transportation, the Remlokomotiv subsidiary of KTZ and Transmashdiesel (a subsidiary of above-named Transmashholding) to set up a joint venture company to produce
GE Evolution series engines. The factory is expected to become operational by the end of 2014. KTZ’s subsidiary Lokomotiv Kurastyru Zauryty (LKZ) already has a locomotive assembly plant in Astana, which can produce under license up to 100 Evolution series locomotives a year. Along with the increase of local content in locomotive production, the plant actively works on bringing the domestic product to the markets of CIS and Baltic countries. KTZ will use the USD 425 M loan from the U.S. Export-Impact Bank to buy 200 GE Evolution series locomotives and locomotive kits that will be assembled into locomotives at LKZ’s plant in Astana.

**Kyrgyzstan:**
The KTJ locomotive fleet is worn by 100%. In 2012 KTJ signed an agreement for the supply of five GE Evolution locomotives being built under license by the Kazakh LKZ.

**Moldova:**
Moldovan Railways own 15 diesel units with four coaches each which are due to be modernised. Some priority projects refer to the upgrading of the passenger rolling stock for transport to the EU countries, a project estimated at EUR 25 M, as well as the revamping of the rolling stock fleet for the transport of passengers to the CIS countries (also EUR 25 M). The modernisation of the locomotive fleet is another project that would require EUR 25 M. Financing might come from the EBRD. Reportedly, the project has been halted due to changed priorities on the background of the now progressing railway reform. Moldovan Railways have a joint project with Remar Paşcani SA (Romania) for the complete overhaul of diesel units. Collaboration plans with Remar Paşcani also include modernisation of bogies to be used on the European 1,435 mm gauge rail tracks.

**Tajikistan:**
In 2009, Tajikistan’s Railways purchased 294 new train cars, including 259 cargo cars and 35 passenger carriages. Currently, Tajikistan’s rolling-stock includes 2,100 cargo cars, 318 passenger carriages and 90 diesel locomotives. In 2012, the national railway company purchased 6 GE Evolution locos produced in Kazakhstan. 50-70% of the rolling stock is outdated and needs replacement. Corresponding modernisation steps are foreseen in the national plan for transport development.

**Turkmenistan:**
In 2011, CSR signed a USD 395 M contract to provide 75 locomotives to Turkmenistan. Under the agreement CSR will deliver ten diesel locomotives for freight trains and 40 shunting locomotives and will also supply spare parts for the railcars. In 2012, Turkmenistan also purchased 350 diesel-powered drive engines in China. In 2012, the British company Stock Plaza completed a number of supplies for the Ministry of Railway Transport of Turkmenistan for several batches of special freight wagons for transportation of cement, mineral fertilizers, grain and mineral products, as well as self-unloading wagons. New passenger cars are imported from China and, as of 2012, the fleet has been almost completely renewed and increased by 271 cars. The locomotive fleet received 36 units. The freight wagon fleet has been significantly upgraded by more than 1,000 units.

**Ukraine:**
The cargo rolling stock consists of 190,000 units, of which 130,000 are publicly owned under UZ control and 60,000 are privately owned wagons. The cargo rolling stock includes 1,900 electric locomotives and 2,500 diesel ones. Rolling stock renewal is a key priority for UZ. In 2006 UZ embarked on a major programme of rolling stock renewal and modernisation at its own

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100% such locos were actually produced in 2011.
workshops. As far as possible the new stock is being built by Ukrainian companies, but to the latest international specifications. In 2013 UZ and Luhansketeplovoz\(^1\) signed a MoU for the supply of 300 electric locomotives at USD 1.4 bn. The production is to begin this year, with deliveries scheduled to be completed by the end of 2016. In 2007, UZ signed an agreement with Siemens for the joint development of a dual-system AC-motored electric locomotive DC-4, intended for operation at a speed of 200 km/h. Between 2009 and 2014 UZ expects to take delivery of 50 DC-4s, with the first 10 being built in Germany and the remainder assembled locally by the Zaporizhzhky Locomotive Plant. In 2012, the EBRD has agreed to provide a USD 62.5 M loan to UZ for the purchase of freight wagons as part of the country’s rolling stock modernisation programme. EBRD provided another loan of USD 62.5 M to UZ in 2009 to replace old freight wagons as part of its fleet renewal programme. The bank also offered a loan of USD 13 M in December 2011 to JSC Lugcentrokuz (LCK), an Ukrainian engineering and industrial company specialising in the production of forged and stamped steel equipment for the rail industry, to improve freight transportation services as well as manufacturing of components for freight wagons. EBRD is also funding for about USD 90 M together with private banks (Raiffeisen Bank, Unicredit Bank and Erste Bank), new wagons acquisition by a private wagon-fleet owner and manager at InterleasInvest. A joint project ‘Introduction of High-speed Passenger Trains on the Ukrainian Railways’ is being implemented with the participation of EBRD. The total value of the project amounts to USD 200 M including an EBRD loan of USD 120 M. This was supposed to complement the new EMUs trainsets produced by Hyundai Rotem to operate during the football championship EURO 2012. These interregional trains began to run on the railways of Ukraine from May 27, 2012 under the name ‘Ukrainian Express’. In December 2012, due to a sharp deterioration of weather conditions in Ukraine, the majority of these trains broke down. Ukraine has its own prototype of high-speed train, but the domestic producer Kriukov Car Plant reportedly sets unreasonable prices for its model.

**Uzbekistan:**

Upgrading the rolling stock, including acquisition, modernisation and major repairs with prolongation of service life of cars and locomotives, and building of new freight cars is one of the priorities of UTY. As of 2009 the company park included 25,700 freight cars, with an average deterioration of 50%.

The ongoing projects should allow UTY to upgrade its freight car fleet by almost 30% within five years. As per plan, UTY intends to finish the modernisation and restoration of its park of diesel locomotives by 2014 at a total cost of USD 181 M. 2,550 cargo wagons will be produced and 7,110 wagons will be rehabilitated between 2011 and 2015. The project envisages the construction of a diesel locomotive engineering plant on the basis of the existing Uzhdorremmash industrial mill located in Andijan (so far manufacturing rail equipment spare parts and equipment for the repair of rolling stock). The projected capacity would be of 208 locomotive sections per a year. The financing will be carried out at the expense of a credit granted by the EBRD - USD 55 M and the company’s own resources of USD 126 M. UTY entered into a contract with the Spanish Patentes TALGO for the purchase of two high-speed passenger trains Talgo-250 and eighteen passenger cars worth EUR 38 M. It also concluded contracts for the supply of 15 electric locomotives with CSR subsidiary Zhuzhou Electric Locomotive Co. for USD 73.8 M. There is a shortage of specialised wagons and Uzbekistan Railway owns very few containers. Almost all of the containers used for transporting goods in and out of Uzbekistan are owned by shippers or by foreign railways, foreign freight forwarders, foreign logistics companies and foreign container leasing companies. Uzbekistan Railway carries containers in ‘home grown’ flat wagons by removing the box from old box wagons. It also moves containers in whatever wagons are able to accommodate a container. This results in damage to the container and its cargo and damage to the rail wagon.

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\(^1\) A subsidiary of Russian company Transmashholding.
3 NATIONAL NETWORKS, REGIONAL, INTERNATIONAL AND TRACECA RAIL CORRIDORS

3.1 National Networks

The majority of the national rail networks in the TRACECA region date back to the fully integrated networks of the Soviet Union. At that time, the railway network was by design centred towards Russia and Moscow and many lines crossed borders over short distances. To date, most of these cross borders have been eliminated by construction of new bypass tracks (the newest example being Uzbekistan, who plans a new railway line to bypass Tajikistan, which would further isolate the latter). But the capacity of the rail routes is still considerably limited by the great amount of single track and non-electrified sections and the general obsolete condition of the infrastructure and rolling stock.

On another hand, given their common historical past, the operating system of the railway transport within the Central Asian countries is the same and there are no problems regarding interconnectivity and interoperability along the two researched TRACECA rail corridors via Kazakhstan and Turkmenistan. The available service capacity for international/transit rail traffic may be considered as adequate. In the majority of cases in this part of the TRACECA region as well as in Caucasus or in the Western NIS, the bottlenecks, when they exist, are not due to the limited capacity or absence of infrastructure but are caused by a sub-optimal asset-management and severe shortcomings in procedure definition and application or operations generating undue delays and dignity issues (especially at border crossing points in relation with border-crossing procedures).

In the Soviet centralised economic system the railway network played a fundamental role in facilitating efficient passenger, and, to a greater extent, freight circulation. During that period the railway system acted as the backbone, i.e. an effective system able to support specific production centres disseminated across the country ensuring the distribution of their products all over the rest of the 22.4 Mio km² USSR.

For this very reason services and network were naturally tailored to the country’s economic structure and so became inward oriented. An overall geopolitical strategy, which lay far beyond the economic sector, governed decisions and transit, as well as international trade, was clearly not the main concern, whereby the international rail connections have been left historically under-developed except in very specific cases e.g. to provide raw materials to steel plants in Poland, Slovakia and Romania.

As a result, the network of many TRACECA countries (first of all in Central Asia, which is rich in raw industrial materials) still keep the pattern inherited from the Soviet times with a general North-South orientation (connections centred towards Russia) and no one track really stretching from west to east.

Under the collapse of the USSR the rail transport sector (and the transport industry in general) faced huge problems (institutional reorganisations, new borders, operational reorganisation based on the appearance of new States, rolling stock split and management, etc.), which entailed a dramatic fall of the traffic after 1991. Over 20 years later some of the problems that emerged during that period have proven to be of such an enduring nature that they still remain unsolved.

3.2 International and Regional Rail Corridors

The development of efficient Euro-Asian inland transport routes could provide additional transport options to the existing maritime routes and at the same time a solid development tool
for the countries in the Euro-Asian region, especially for the landlocked ones, which depend on their neighbours for access to international markets.

Three main International East-West Railway Corridors connect Europe and Asia:

- **The Northern Corridor** links Eastern Europe and the PRC, Korean Peninsula and Japan via Russia and Kazakhstan (the Northern corridor and the Russian national Trans-Siberian Railway corridor partly overlap),
  
- **The Central Corridor** (partially including TRACECA network) runs from Eastern Europe to the PRC via the Black Sea, Caucasus, the Caspian Sea and Central Asia,
  
- **The Southern Corridor** joins South-Eastern Europe and the PRC via Turkey, Iran and Central Asia.

These three international corridors follow the same route in China and cross the Kazakh-Chinese border at Dostyk or at the newly-opened border crossing point at Khorgos\(^\text{12}\) (Xinjiang, PRC) where the change of track gauge from 1,520 mm to 1,435 mm occurs.

The Northern Corridor is a complete rail route. Another evident advantage of the Northern Corridor is the lower number of countries involved and, therefore, the reduced impact of border crossings both in terms of costs and time lost.

The Southern Corridor is also a complete rail route with the exception of a (presently very poor) rail-ferry connection in Turkey (Van Lake). Also it crosses Iran, and, under the present political circumstances, a lot of cargo-flows is prevented to enter and/or cross this country.

The Central Corridor instead is a multi-modal Corridor since it crosses Black and Caspian Seas. Its competitiveness is therefore definitely linked to the efficiency of the sea transport, the intermodal facilities in the ports, and their hinterland connections.

### 3.3 TRACECA and Competing Rail Corridors

**Transportation of transit cargo by sea** has some strong advantages, such as low delivery cost, established relationships with customers and high standards of service. Land transit routes offer only one competitive advantage, namely the speed of delivery, which is two to three times faster compared with the sea routes linking Far East with Europe. This advantage must be exploited.

**TRACECA** is an international programme aimed at strengthening transport communication in the regions of the Black Sea basin, South Caucasus and Central Asia. Although the TRACECA initiative brings countries together in order to develop and promote the common transport corridor, in practice the integrated TRACECA railway corridor has not been formed yet. The TRACECA Permanent Secretariat has been promoting and discussing in working groups a number of joint projects (i.e. Development of electronic maps for truck drivers, ‘Model highways initiative’). Regional coordination, improvement and harmonisation of tariffs and operations in the railway sector, especially needed for regular international Container Block train operations, has not been in the focus until the ‘Silk Wind’ project emerged as an initiative of Kazakhstan in 2012 (**see ‘7. Ongoing Plans, Projects’**). The LOGMOS Master Plan is attempting to address this issue.

\(^{12}\) In January 2013 the first test train was sent with containers shipped by General Motors South Korea through the Chinese port of Qingdao and via the border crossing points of Khorgos - Altynkol to the GM Abylk factory in Uzbekistan. If this works out it will significantly shorten the today’s transit-time based on a routing via the port of Bandar-Abbas in Iran.
TRACECA is connected with the Major Transnational Axes system (Central and South-Eastern axes) via the port of Istanbul, Constanta, Varna, Odessa, and the Danube River. With the Asian transport networks it is connected via the Kazakh-Chinese border stations Dostyk and Khorgos and Iran via the Turkish railway network.

In the Black Sea the main rail-ferry flow goes from west to east. 90% of the cargo volume carried by the ferries moves between Ukraine and Georgia and the remainder is represented by exports from Bulgaria to Georgia. The rolling stock 'privatisation' by UZ, namely the higher costs of the wagon-lease and land transport along with the outdated operational procedures applied by UZ in the management of the rolling stock moving between Ukraine and Caucasus, drives shippers to use other transport modes. This has a negative effect on the efficiency of the Black Sea ferry lines along the TRACECA route. In the Caspian Sea, the wagon flow from Aktau to Baku is larger than in the opposite direction, but the number of wagons moving from Baku to Turkmenbashi and in the opposite direction is much larger.

### Table 2: Number of Wagons Transported by Rail-ferries (Maritime Report, 2013)

<table>
<thead>
<tr>
<th></th>
<th>Wagon(s)</th>
<th>Tonnage (in thousand tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baku - Aktau</td>
<td>2,161</td>
<td>1,486</td>
</tr>
<tr>
<td>Aktau - Baku</td>
<td>1,625</td>
<td>1,422</td>
</tr>
<tr>
<td>Baku - Turkmenbashi</td>
<td>15,799</td>
<td>18,518</td>
</tr>
<tr>
<td>Turkmenbashi - Baku</td>
<td>13,141</td>
<td>16,493</td>
</tr>
<tr>
<td>Total number of wagons</td>
<td>32,726</td>
<td>37,919</td>
</tr>
<tr>
<td>Total Tonnage</td>
<td>2,088.9</td>
<td>2,296.4</td>
</tr>
<tr>
<td>out of which to / from Aktau</td>
<td>10.55%</td>
<td>9.30%</td>
</tr>
</tbody>
</table>

Some projects related to the institutional and organisational building of railway corridors in the Central Asian region are carried out under the umbrella of CAREC. In this respect, at a meeting held in Wuhan in PRC in October 2012, ministers from the 10 CAREC Program countries agreed on an action plan to implement transport infrastructure projects costing more than USD 23 bn, along with energy and trade initiatives aimed at improving connectivity. In parallel to building new infrastructure, efforts will be devoted to reduce bureaucratic barriers for cross-border trade and to tackle smuggling.

At the same time, the proposed CAREC corridors are not entirely the same as the TRACECA railway corridors. Therefore, infrastructure improvement initiatives at present are more often carried out at a national level (sometimes even decreasing the interoperability of the entire corridor). Different multilateral agreements in the region were usually concluded between two to three countries in order to improve border crossing issues (e.g. an agreement on joint border crossing points management between Ukraine and Moldova); to construct new railway lines (Agreement on coordination of the activity for the realisation of the Railway Connection Baku – Tbilisi – Kars between Azerbaijan, Georgia and Turkey of 07.02.2007; North-South Railway project implemented by Kazakhstan, Turkmenistan and Iran since 2010); or to establish more
transparent tariff formation mechanisms (e.g. through cargo rate discussed between the participants of Silk Wind project)\(^\text{13}\).

**Some parameters of TRACECA railway routes are shown below:**

The total length of the corridor is about 7,000 km (Constanza-Dostyk – 7,120 km, Varna-Dostyk – 7,168 km, Odessa-Dostyk – 7,067 km, the mouth of the Danube - Dostyk – 7,057 km).

On the Eastern shore of the Caspian Sea, starting at the rail-ferry terminals at the ports of Aktau and Turkmenbashi, respectively, two railway lines via Kazakhstan and Turkmenistan connect Uzbekistan, Tajikistan and Kyrgyzstan to TRACECA railway network.

There are 8 break-of-gauge/bogie exchange points between the standard and Russian gauge railway networks:

- Chop on the Hungarian-Ukrainian and Slovakian-Ukrainian border;
- Yagodin, Mostyska\(^\text{14}\), Rava-Russka on the Polish-Ukrainian border;
- the Varna Ferry Complex in Bulgaria;
- between European and Georgian railways at the Turkish-Georgian border\(^\text{15}\), and
- the Dostyk and now Khorgos stations on the Kazakh-Chinese border.

The total length of existing railways amounts to 5,113 km (Russian standard gauge of 1,520 mm):

- 1,005 km electrified;
- 1,456 km double-track; and
- 2,298 km single-track.

There are some competitive disadvantages of the TRACECA corridor in its rail component:

- two sea legs (the Black Sea and the Caspian Sea), which require ferry operations;
- different gauges in the participating countries (requiring at least two bogie exchanges if going to Europe but only one if going to/from Central Asia and Caucasus; and
- no access to South-Eastern Asia.

The TRACECA railway corridor is a multi-modal and a multi-country corridor, therefore its competitiveness depends a lot on the efficiency of the intermodal transport organisation and harmonised cross-border procedures.

\(^{13}\) For a complete list of signed bilateral and multilateral agreements in the railway sector see the chapter “Legal environment in the field of transport” contained in the Country profiles published at http://www.traceca-org.org/en/technical-assistance TRACECA-regional-project-logistics-processes-and-motorways-of-the-sea-ii/master-plan/country-profiles/

\(^{14}\) Starting on 1st June 2009, PKP has operated a daily night train Kraków - Lviv, using the 1435 mm gauge line to/from the SUW2000 gauge changing facilities at Mostyska 2. The 1520 mm daytime passenger trains use the gauge changing facilities at Przemyśl. UZ works freight trains to Medyka. On the Polish side the 1520 mm gauge continues to Zurawica, on the Ukrainian side 1435 mm gauge track ends at Mostyska 1.

\(^{15}\) To be built near Akhalakali in Georgia (the track from Akhalakali to the border station Kartsakhi in Georgia will be on standard European gauge).
Southern East-West Railway Corridor

This corridor can be seen as a natural competitor (in some sections as a supplement) of TRACECA. The rapid modernisation of rail transport communications in Turkey will provide a better capacity and faster delivery of goods between Central Asia and southern Europe in the future.

In April 2013 the President of Turkey approved legislation which will enable the private sector to invest in rail infrastructure and operate open-access trains within the national network. The state railway TCDD is to become an infrastructure manager under the new legislation. In September 2013, DB Schenker Rail began offering a service known as the Bosphorus-Shuttle with three pairs of trains each week between Germany and Turkey. The trains cover the 2,300 km stretch between Nuremberg and Istanbul in 5 days. The Bosphorus Shuttle will carry both container traffic and wagonload consignments. Liberalisation of the Turkish rail market is now underway, raising the medium-term prospect of DB Schenker operating the service throughout under open-access provisions.

The Trans-Siberian Rail Routes

Figure 2: Trans-Siberian Railway

The Trans-Siberian Railway, together with its various associated branches and supporting lines, established the first rail connection between Europe and Asia. It is stretching from Moscow to Vladivostok for 9,288 km. TransSib is as a major freight artery offering a fully developed container service across Eurasia from Berlin to Beijing, with links to major cities in Europe, including Helsinki, Kaliningrad, Warsaw, Minsk, Kiev, St Petersburg, Smolensk and Yekaterinburg. TransSib also has connections to Astana in Kazakhstan, Ulan Bator in Mongolia, Beijing in China, Pyongyang in North Korea and Seoul and Pusan in South Korea. Despite the fact that the TransSib – Manzhouli (Inner Mongolia Autonomous Region) route is significantly longer, this is today the most efficient route for the cargo delivery from Europe to inner Chinese regions. The border crossing Zabaikalsk – Manzhouli is now the largest Russian-Chinese
railway crossing point. The capacity of this line was increased from 22 to 40 pairs of trains (excluding passenger and commercial traffic) with the design speed 100 km/h for freight trains and 140 km/h for passenger trains. The processing capacity of Manzhouli station was also enhanced with the construction of two receiving-departure yards (one for 12 tracks of 1520 mm gauge and one for 14 tracks of 1435 mm gauge to send further goods coming from Russia). The Transbaikal railway is considered the most promising site for traffic increase between Russia and China.

The TransSib offshoot, the TransSib - Kazakh route (Turkestan-Siberian railway), built in 1927-31, is a 1452 km long route connecting TransSib at Novosibirsk with Central Asia, seems to be a very attractive option in terms of infrastructure and distance. Meanwhile, because of the high risk of unfair competition due to the presence of monopolistic structures operating on the main TransSib railway market, this route is now underused. In addition, the infrastructure condition on the Kazakh section of the route and the capacity bottleneck at the Dostyk – Alashankou border crossing section contribute to the fact that this route currently is not being used to its full potential.

At a meeting with cabinet officials last July, the Russian president has set an ambitious task to modernize Russian railway lines, including the TransSib mainline and the Baikal-Amur mainline (the 4,000 km TransSib branch line). This upgraded transportation channel would bring advantages to the Asian-Pacific countries, because the Suez Canal is overloaded with merchant vessels and is located in an unstable region. Russia intends to spend about USD 18 bn on the project. Foreign investments might come within the scope of public-private partnership, i.e. under government guarantees.

In October 2013, Russia and North Korea have officially opened the Hasan-Rajin railroad as part of the Trans-Siberian Railway. The project included reconstruction of the 54 km section from the Russian border to the North Korean Rajin port and modernisation of the port infrastructure. Rajin will at first handle coal freight coming from Russia by rail to be transshipped to China, South Korea and other neighbouring Asian countries. Further plans are to upgrade and equip it to provide container services. Current load capacity at Rajin is 4 Mt of coal per year. The next step, proposed by Russian Railways, is to reanimate the Trans-Korean Mainline, which stopped operating in 1950 as the war between the two Koreas approached.

Rail freight traffic on TransSib to the Russian Far East ports has increased by 55% over the last 5 years and now comes to around 110 Mt a year. But from the point of view of cargo transit development between Europe and Asia, the main problem of the Trans-Siberian is its limited capacity (the entire capacity of TransSib is about 120 Mt per year, or about 13% of the volume of container traffic between Europe and Asia) and the high cost of delivery (it's twice as expensive as by sea), which is associated with the monopoly of RZD in Russia. But it takes only half the time compared to the sea route and there are a minimum number of cargo transshipments. The total volume of international container transportation on the Trans-Siberian mainline in 2012 was 638.216 TEU, which is 15% more than 2011.

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16 At 28.17 Mt Manzhouli posted a healthy 5.9% year-on-year increase in import and export cargo handled in 2012. Furthermore 1.69 M pax crossed this checkpoint which represents a 20% increase compared with 2011.

17 This route played a great economic role during the Soviet era promoting cotton trade and industrialisation of Southern Kazakhstan. After the collapse of the Soviet Union, this line lost its economic importance having surrendered the initiative to TransSib main route.

18 RZD carried a total volume of 2,970,600 TEU in 2012 with the biggest increase in shipments of containers in transit (167,000 TEU transported i.e. +54.2% compared with 2008).
As of 2013, express freight trains were being used by manufacturers such as Hewlett-Packard to ship products from factories in the inland regions of China via Kazakhstan, Russia, Belarus, and Poland to Europe. The Customs Union of Belarus, Kazakhstan and Russia allows reducing inspections, delays and theft. Shipment from a factory in central or Western China such as Chongqing or Chengdu to distribution centres in Europe takes about 3 weeks, which is half as long as by sea but 25% more expensive. Air freight, including processing, takes about a week, but costs 7 times as much as rail and adds 30 times more carbon to the atmosphere. Freight containers are sealed and heavily guarded. Armed guards accompany the trains.

In 2008, China and Germany inaugurated the first regular rail transportation service between Europe and Asia: a long distance freight train service named Trans Eurasia Express between Beijing and Hamburg. Travelling a total of 10,000 km, the train uses the China Railways and the Trans-Mongolian line to travel from Xiangtan to Ulan Bator, where it then continues north to the Trans-Siberian. After reaching the end of the TransSib at Moscow the train continues to Germany via rail links in Belarus and Poland. Total transit time is 15 days, which is significantly shorter than the more than 30 days average it would take for the freight to make the same journey by ship. By 2012, DB Schenker had the service running five days a week and a number of major companies had bought into the route. Auto manufacturers like BMW, Audi, and Volkswagen now ship parts overland from their German manufacturing plants to their Chinese assembly plants, and computer companies like HP and Acer ship from their Chinese factories to the European market. In 2011-2012, HP has shipped over four million notebook computers from Chongqing to Germany.

In October 2012, one more pilot cargo block train carrying 50 containers with computer parts set a new record covering 11,000 km between Wuhan (PRC) and Pardubice (Czech Republic) in 16 days.

Another service, from Chongqing to Duisburg via Alashankou crossing Kazakhstan, Russia, Belarus, and Poland was launched in March 2012, covering 11,179 km in 16 days. A container service from Zhengzhou in central China to Hamburg in Germany was launched in July 2013. The train will travel 10,214 km for 16 to 18 days, passing Kazakhstan, Russia, Belarus and Poland. There will be 6 such trains to Hamburg this year and 50 trains in 2014, generating a trade volume worth a billion dollars.

DB Schenker has been involved in the operation of more than 300 trains between Germany and China over the last three years. Regular weekly block services already run from Chongqing to Duisburg and from Leipzig to Shenyang, which serve customers in the electronics and automotive industries.

The route through Kazakhstan from the border crossing Dostyk through Aktogay and Astana with access to the RZD network through the border crossing Tobol-Kartaly provides the shortest distance between the western regions of China and Europe. The length of the route Urumqi - Berlin by Tobol-Kartaly is by 1,409 km shorter than when using the TRACECA corridor (2,076 km on Kazakh territory and 2,069 km through Russia crossing only 2 countries). As Russia and Kazakhstan are in a Customs Union, they have a competitive advantage over TRACECA. Customs at the Russian-Kazakh border check only import and export but not transit wagons. There are less customs procedures, less delays, less irregularities, and less documents to prepare, whereas the TRACECA route has customs at the Poti/Batumi ports, the border between Georgia and Azerbaijan, as well as at Baku port and Aktau port.

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19 Saving thus 2,000 km compared with the north route via the TransSib.
Still there is a lack of facilities and bogies or carts for containers and other general cargoes at the Dostyk terminal. Russian Far-Eastern freight forwarders also report the Russian Customs procedures and drawing of documentation represent a main obstacle in the way of developing their activity: cargo weight declaration seems to be a source of permanent conflict (with subsequent fines and bribes) especially when American weight measurement units have to be converted to the metric system.

The TRACECA rail routes are currently not very competitive and the corridor needs to be extensively improved in order to match the conditions offered on alternative routes. Still, there is no guarantee that even Russian freight forwarders would not choose the TRACECA rail corridor if it proved more profitable for them. In the future, it could play an important role in the provision of railway freight traffic between Southern Europe and China, depending upon its development, sufficient political support to remove delays caused by border crossing procedures, and if political will is translated into concrete infrastructure modernisation projects and measures to remove the operational barriers.

A positive manifestation of the joint political will and a challenging project for the future of the railways in the region is the Silk Wind container block train from Kazakhstan to Europe (see ‘7. Ongoing Plans, Projects’).

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20 During the TransRussia April 2012 transport exhibition, Chinese freight forwarders met by the Project reported that the situation at the Dostyk border-crossing station had drastically improved. In 2011 massive rehabilitation works at the Alashankou railway station on the Chinese side combined with a dire lack of platforms (unreturned from Russia) on the Kazakh side and documentation problems (reported also by Russian Far-Eastern forwarders) and probably linked to the implementation of the Customs Union’s rules, generated waiting-times of up to 2 months. The delay at the time of the interviews was back to a ‘normal’ 2 to 5 days.
4 PHYSICAL BARRIERS

The following physical bottlenecks have been identified within the TRACECA rail corridor:

- General obsolete condition of the infrastructure and rolling stock, shortages of rail cars, containers and locomotives;
- Poor/out-dated technology and low levels of security\(^ {21} \);
- Different gauges (Europe, Turkey, Iran, PRC – 1,435 mm, TRACECA corridor countries – 1,520 mm). The special facilities built for bogie change at border stations do not reduce the acuteness of this problem because the processing capacity of transfer points, which is generally too low, do not correspond to the traffic volumes and this results in congestion at the sorting yards;
- Out of gauge cargoes cannot be moved via the corridor through Caucasus due to the gauge restrictions (tunnels) as well as small radii of curves (200 m) and high gradients (up to 2.9%) in the mountainous sections which entails the loss of complete contracts for local operators\(^ {22} \);
- Different electrical systems on separate segments: 3 kV DC, 25 kV AC 50 Hz and a considerable amount of sections that are not electrified;
- Shortage of dual-system electric locomotives for use on both 3 kV DC and 25 kV AC networks causing operational problems;
- Different signalling and control systems: not all of the sections of the railway corridors are equipped with automated control systems;
- Only about a half of the rail corridor is double-track;
- Shippers and consignees have no access to information about the location of their shipments, for there is no unified information system enabling users to track/trace their cargoes (some countries started implementing automated information processing methods, e.g. Georgia);
- At the Poti, Baku, Turkmembashi and Aktau seaports there are always risks that suitable and sufficient rolling stock will not be available\(^ {23} \);
- Train speed limits: the maximum freight train speed varies on average from 60-80 km/h. On some sections in the Caucasus, due to infrastructure conditions, the train speed is limited to 20-40 km/h;
- Transshipment of containers between different modes of transport causes significant time delays, and shortage of flat container trailers and vehicles is frequent.

\(^ {21} \) Theft is a major worldwide concern for railway companies (and not only in TRACECA region) and a deterrent for shippers. Still security is an issue railways address very efficiently when they can as proven by the fact Chinese and European manufacturers ship valuable computer parts and equipment by train between the two ends of the Eurasian Continent without any such problem being reported.

\(^ {22} \) Users rather wait for the river navigation period (March/April till October/November depending on weather conditions) and ship OOG together with in-gauge cargoes on sea-river vessels from Black and Azov Sea ports via the Volga-Don Complex.

\(^ {23} \) Before the GFC and the considerable drop in the volumes handled, this was, and may well be again, a reason for users to use trucks to dispatch containers from Poti/Batumi.
One of the weakest points on the TRACECA rail corridors is the reliability of the transit times. Even local freight forwarders do not have basic information concerning transit time on the route between PRC - Kazakhstan and Azerbaijan. This results from the absence of accurate schedules for rail transport across the Central Asian countries, from congestion originating from outdated infrastructure, lack of rolling stock and other operational barriers. Container transport is mixed with the regular wagon deliveries and, therefore, experiences additional delays (especially when sorting out/marshalling the wagons at different stations on the way). Moreover, in the majority of the TRACECA countries the present freight transport systems are still based on the method of assembling and disassembling of freight cars at each freight yard, when trains are dismantled and recomposed depending on the cargoes' final destinations. This is a cost-effective system for the supply side, but a very time-consuming system which decreases the time reliability of the overall service.

Furthermore, the absence of coordination in supply of the railway wagons to the ports between the railways of Azerbaijan, Turkmenistan and Kazakhstan make the Caspian Sea ferry crossing time very unreliable. It is impossible to establish fixed schedules for the rail-ferries.

The rehabilitation and development of railway infrastructure require computerisation of the sector, development of information systems and introduction of resource saving technologies. Renovation of power supply facilities and railways electrification are assigned a significant place in the infrastructure needs. The relevancy of this task is evidenced by the considerable difference in the cost of transportation by electric traction and diesel-electric traction (the cost by electric traction is 60% lower). Commissioning of new electrified sections will provide considerable extension of electric locomotives operation zone, increase of the weight and speed of trains and improvement of the locomotives efficiency as a whole.

On the TRACECA railway corridors there is no unified information system that enables users to trace the location of their cargoes on the spot. Wagon tracking systems are occasionally improved but are still not automated. Therefore, there is no tracking/tracing and no service predictability. Some countries have started implementing automated information processing methods, within their territory however, these remain individual measures. GR, for instance, introduced in 2011 the on-line placement of orders for the freight transportation.

As a risk and negative effect of lack of technical co-operation between neighbouring countries, it is worth mentioning the case of the rehabilitation plans for the railway line Poti-Baku. Both ADY and GR have projects for the modernisation of their own section, but these projects will entail a reduction in the interoperability of the line. As a matter of fact the electrification system of the 503 km line from Baku to Beyuk-Kyasik on the Azerbaijani-Georgian border will be converted from 3 kV DC to 25 kV AC, while the Georgian section, from the border to Poti will maintain the 3 kV DC electrification system. This will improve the railway performance in Azerbaijan because it will increase the power of the locomotives but it also will make a change of locomotive compulsory at the border with Georgia (today the change of locomotive occurs but is due to the organisation of the service only).

**Missing Links**

Over 72% of the total freight volume transported in Kazakhstan move by rail. Meantime a number of rail connections are missing (Aktau to eastern and southern Kazakhstan for instance). The rail network still keeps the pattern inherited from the Soviet times with a general North-West/South-East orientation with no one track really stretching across the country from

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24 It must be noted that the same happens in Russia: for instance containers moving via Novorosyisk to Central Asia are first sent to the central Northern Caucasus rail node (Rostov on Don) where they may stay for many days before joining the main railway line to Kazakhstan.
west to east. Out of 17 railway border crossings 11 are with Russia, 3 with Uzbekistan, 1 with Kyrgyzstan and 2 only with PRC (Dostyk and Khorgos).

Early 2012 preparations started under LOGMOS auspices for a new block train service connecting Kazakhstan (from the Chinese border) with Turkey and the Black Sea region via the Caspian Sea and the Caucasus.

This so-called Silk Wind project is aimed at a significant reduction of transit time between PRC, Turkey and (Southern) Europe with a much improved quality of services. The precondition for its realisation is the elimination of the following missing links and bottlenecks along its route (the respective projects will be introduced more in detail in Chapter 7 ‘Ongoing plans, projects’):

- Construction of new railway line between Georgia and Turkey (Baku-Tbilisi-Kars): this involves rehabilitation of the whole railway infrastructure from Baku to Kars. The line should be fully operational by the end of 2014;
- Construction of 988 km new railway line between Zhezkazgan and Beyneu in Kazakhstan: this involves shortening the distance from PRC to the Caspian Sea by approximately 1,000 km. Construction has already started and the line should be operational in 2016;
- Construction of the new Baku International Sea port in Alyat: The first phase is due for completion in 2015-2016;
- Modernisation and extension of the port of Aktau, Kazakhstan.

By the end of 2012 a second rail border crossing point with PRC opened at the cross-border international logistics centre of Altyntkol/Khorgos.

Considering the TRACECA rail corridor, it is clear that the rail system that feeds the Black and Caspian Seas connections has a critical section in the Caucasus. As a matter of fact, on both the West and East side there are other railway lines that represent optional routes while in the central section, in Georgia and Azerbaijan, there is no alternative to the railway line Batumi/Poti - Tbilisi - Baku.

With the new tunnel under the Bosphorus (the Marmaray project a single rail transport corridor will be created, which, in principle, should allow the delivery of goods from Asia (PRC, Iran) to Europe and back on a non-stop scheme (avoiding the maritime leg across the Bosphorus).

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25 The ILC (actually the ‘Khorgos International Center of Boundary Cooperation JSC’) is located 361 km from Almaty and 670 km from the provincial city of Urumqi (3 M inhabitants, capital of Xinjiang province, PRC) and covers an area of 528 ha in total.

26 The nearly USD 3 bn project features a 13.6 km Bosphorus tunnel crossing (out of which 1.4 km is an immersed tube at 60 m depth) and the upgrade of 63 km of suburban train lines to create a 76.3 km high-capacity line between Gebze (Asian side) and Halkali (European side). Opening is scheduled for October 2013.

27 The tunnel is primarily designed to alleviate the road traffic congestion in Istanbul and therefore the Marmaray Project focuses on passenger transport. According to TCDD it could be used by freight trains within a specific time frame after midnight but this remains to be confirmed. In the meantime a new rail-ferry line was launched in July 2012 between Derince on the Asian side and Tekirdağ on the European one. The berth at Derince is still under construction and the ferry is therefore not operating properly, but it seems this service is meant to be the backbone of regular freight wagon transport between the Asian and European sides at least until late in 2014.
Although there is little hope of an opening of the Armenian-Turkish border anytime soon, this would, in all probability, impact negatively the rail transport operations with Georgia as cargo-flows would be partially deviated to Trabzon and trucked from there\textsuperscript{28}. Rail transit via Armenia is also not prospective, as long as the border with Azerbaijan remains closed and the political situation with Iran does not improve.

\textsuperscript{28} Actually this is happening already: Turkey and Armenia grant each other a number of truck permits (200 in 2012) in the other’s territory. Reportedly a truck trip from Armenia to Trabzon is USD 600 cheaper than to Poti. The port of Trabzon working well below its design capacity is keenly eyeing the Armenian export-import trade via Georgian ports, which are estimated at USD 7.5 bn in value.
5 REGULATORY AND OTHER NON-PHYSICAL BARRIERS

Common Features

Non-physical barriers are the most significant obstacles to the development of rail cargo transit in the region and cause serious delays in cargo delivery. Wasted time not only results in loss of money and customer trust, but also ruins the main (in fact the only) competitive advantage land transit has over sea transit.

Non-physical barriers are mostly related to the intermodal connections with two sea legs and multiple border crossings. To a large degree, these barriers have an operational character, are ‘manmade’ and can be removed through ‘soft measures’.

Such operational barriers mainly consist in complicated customs procedures at border crossing points, which significantly increase waiting times for vehicles and rolling stock (e.g. random inspections that require sealed transit containers to be opened).

Users also report big difficulties and delays on boundary railway stations due to a bad and untimely coordination between the railways, the customs, the forwarding agents and the customs brokers, the tremendous number of documents required, long registration procedures with numerous state (and highly bureaucratic) agencies. Administrative rules and documentation (including Custom’s and railways operators) are not clear, often changed, differing from one country to another and access to relevant information is not easy, even for local enterprises.

Border crossing by rail in the TRACECA region goes together with complex operational processes and procedures. Several countries within the TRACECA railway corridor are actively working on the improvement of their customs procedures and introducing modern automated systems for customs clearance and centralised cargo management, as well as performing customs systems reforms. Projects for the reconstruction of the customs checkpoints in accordance with best international practices, integrating the ‘single-window’ concept, are ongoing in Armenia, Azerbaijan, Georgia and Kazakhstan. In order to improve the control on delivery and the processing of cargoes and to simplify customs clearance control, Uzbekistan started to operate a Unified Automated Information System to control delivery and processing of cargoes with a special application for railways (UAIS-Railways).

Another non-physical barrier is non-harmonised transit tariffs: despite the unified tariff policy being applied across the CIS, variations in the funding of railways and the different methods used to calculate freight tariffs have resulted in significant fluctuations in transport costs. Obtaining quotations for transport costs is a difficult and time-consuming process and illegal payments vary and cannot be budgeted. For instance, carrying a 20’ container from Poti to Baku (863 km) with general cargo costs USD 569, while the rail tariff from Aktau to Almaty (2,910 km) is only USD 793. In addition, the wagon handling/transit costs differ greatly between the ports: e.g. USD 230 wagon at Poti, USD 70 at Baku, USD 600 in Aktau (MoS Feasibility study). Freight forwarders operating in the region indicate that tariffs are also subject to sudden changes and sometimes the rail tariff inconsistencies are observed within one country29.

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29 For example, railway access to the Aktau port in Kazakhstan is controlled by a private operator (KTS), which is different from KTZ (national railway company). Forwarders have to have two separate contracts, one with KTS and one with KTZ. Tariffs charged by KTS for the short route section of 15 km are considered to be very high and this discourages many of shippers from using the TRACECA-Aktau route.
Costs are altogether higher than in other corridors in particular with rail tariffs. For example, transportation of a 20’ container by Trans-Siberian railway from Shanghai to Moscow would cost USD 3585, with a delivery time of 15 days\textsuperscript{30}. Travel times are not fixed because they depend upon too many transport operators. Therefore, dates of delivery of cargo to the consignees cannot be scheduled accurately. Low reliability of service and high risk of damages and theft of the cargo (multiplied by the very long distances to be covered) reportedly are the current reasons that negatively affect the shippers’ decision to transport their cargoes by rail in the TRACECA region.

The Caspian Sea is one of the major bottlenecks on the TRACECA route. Adding to the usual hazard of the voyage by sea, the lack of coordination between the different transport modes, mismanagement of the existing port infrastructure, missing port infrastructure and non-transparent port-transit price formation make the Caspian Sea one of the most unreliable supply chain segments in the corridor.

**Political Developments**

Changing policies and unsecured privatisation processes in TRACECA member states sometimes entail decisions which could potentially hamper the harmonisation process within the transport corridor.

- The Open Society Georgia Foundation estimated that USD 900 M would be required to fully replace the aged wagon fleet of GR. The government, which came to power in October 2012, would rather seek to privatise the rolling-stock of GR, while maintaining state control over the rail infrastructure. In July 2012, Georgian Railway issued USD 500 M in 10-year Eurobonds with a 7.75% coupon to pay back its five-year USD 250 M Eurobonds issued in 2010 with a 9.8% coupon. The new government takes the view that this was ‘the wrong plan’, and hopes that privatisation might help pay back the company’s increasing debt. It remains to be seen how transparent the privatisation process will be to optimise the profitably for the national economy.

- As reported above, in March 2012 Ukrainian President Viktor Yanukovych signed a law defining the frame for the creation of a state joint-stock company for public railway transport. Within the ongoing reform process Ukrzaliznytsia began to transfer its rolling stock on the balance sheets of several state companies. In particular, covered wagons went to ‘Ukrreftrans’, fitting platforms to ‘Liski’, specialized rolling stock to ‘Sriyskiy Car Repair Plant’ and gondolas were transferred to ‘Ukrspetswagon’ and ‘Darnitskiy Car Repair Plant’. Thus, freight cars are no longer owned by the state administration but by state owned enterprises (SOE). However, instead of enabling customers to rent cars directly from these SOE, Ukrzaliznytsia introduced 6 unknown LLC as ‘mediators’ into the scheme. Now users have to sign contracts with these LLCs and report some additional fees. These intermediaries charge 0.3% - 0.5% from transport cost for their services and a so-called ‘additional magnification factor’ of 1.3 is now applied for the run of empty wagons (that is, a de facto increase in tariffs of 30%). All the financial flows of export-import and domestic rail freight go through these LLCs. Such examples of ‘privatisation’ in Ukraine suggest that transparent and competitive conditions are not always met in a way that maximises the benefits for the state.

**Customs Procedures for So-called ‘Excise’ Transit Cargoes in Ukraine**

The Customs Service of Ukraine believes that the railroad does not match the philosophy of Customs’ Carrier. As a result, it cannot guarantee to the state the compensation for the financial

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\textsuperscript{30} The EurAsEC Transport Corridors, 2009.
losses related to the possible disappearance (by loss, theft or damage) or unauthorized use of excise goods. Excise cargoes (cars, light petroleum products, alcoholic beverage and tobacco) belong to the highest rail tariff class. Losing this market share is therefore most disadvantageous for the railway. Due to the fact that UZ lacks the status of a Customs’ Carrier and needs to provide financial delivery guarantees, incoming goods of such category are basically meant for the domestic market and move by truck, only. Besides, the Customs is constantly expanding the list of goods that require guaranteed delivery. This means diversion of funds and additional inconveniences for the clients. If no proof of financial guarantees can be given for the passage of certain goods, they are delayed at the border. The border crossings thus accumulate entire ‘warehouses on wheels’. Accordingly freight forwarders prefer to look for other routes bypassing Ukraine, which does not comply with the intention of the Ukrainian authorities to strengthen the country’s transit potential.

CIS/SMGS Rail bills

Development of the railway transport between Central and Western Europe, and the Eastern Europe and PRC is being restrained by the presence of fundamental distinctions of provisions of two different international transport law systems: SMGS/OSJD and CIM/OTIF. Contracts for international railway freight transportation are being regulated by CIM for the states of Western and Central Europe and by SMGS in Eastern Europe and PRC. These statutory acts are based on different legal systems.

Figure 4: OTIF (CIM) and OSJD (SMGS) Members

The regime of liability of the SMGS differs from the CIM’s one. Otherwise it is used exactly in the same way as far as Customs’ clearance of the goods is concerned.

The aim of the common CIM/SMGS railway consignment note is to simplify and shorten transit and border-crossing procedures inasmuch as there will be a single transport document recognised by all Customs services, covering the whole stretch of the carriage from origin to destination through, from and to countries using either SMGS or CIM.

Performance of Customs’ clearance could therefore be made on the basis of this common railway note instead of an SMGS or CIM one whichever the country of final destination in OTIF or OSJD areas.

Within the project to make the CIM and SMGS consignment notes legally interoperable, the International Rail Transport Committee (CIT) and the OSJD work as fast as they can on the implementation of a comprehensive contractual framework to allow goods to be moved simply in
administrative terms but with complete legal certainty. The CIT and OSJD are coordinating their work closely with the UNECE. A further step towards the consolidation of the legal interoperability has been taken with the setup of the Special Conditions of CIM/SMGS Liability (SC CIM/SMGS). These are standard provisions for liability in case of the loss of or damage to the goods.

Another objective of the joint CIT/OSJD project is to extend the application of the common consignment note CIM/SMGS in practice, in particular for the transcontinental transportation between Europe and PRC in transit through Kazakhstan on the Great Silk Rail Road. This will allow shippers to save time due to the reduction of container idling and resulting demurrage at border stations and help them save money. The client is usually charged for re-issuing the CIM consignment note in place of SMGS note for each shipment at border stations. The introduction of the CIM/SMGS common consignment note will eliminate these extra payments.

As for the Silk Wind Project, Turkey, the only participant country to exclusively use the CIM form, initially expressed some concerns about the possible implementation of temporary measures similar to those successfully developed by EU countries in the operation of block container trains with CIS countries and further, through them, with the PRC (such as the Chongqing - Duisburg block train, which has even reached the stage of implementing experimentally a common electronic CIM/SMGS rail bill allowing shippers to make pre-declaration and thus save time on border-crossing points). The main reason for this is that Turkey, unlike European countries like Germany or France, had no direct railway links with the SMGS railway system for over 20 years, since the only link to Armenia Kars - Gyumri had been closed in the early 1990s. Thus, Turkish railways and Turkish freight forwarders (except some specialised companies) have no experience in handling SMGS documentation and so were initially insisting on CIM documentation being used throughout the Silk Wind project.

In September 2011, China adopted in its railway transport system the provisions of the CIM/SMGS consignment note. Therefore, the routes open to the CIM/SMGS consignment note are those to Kazakhstan, Mongolia and Russia.

The most recent example of a successful application of the CIM/SMGS common consignment note is the first container train PRC - Europe that was dispatched by Russian Railways Logistics (RZDL) in cooperation with its Chinese subsidiary YuXinOu Logistics on October 31, 2012. Introduction of CIM/SMGS common consignment note was a result of two years of work by the railways of all the transit countries involved (Russia, Belarus, Kazakhstan and PRC). The common consignment note is a customs document which is issued in both paper and electronic form according to European Union requirements for prior authorisation. As a Pilot project agreed upon between the railway operators and customs services for this project, this is the first step towards creating the Unified Rail Transport Law on the level of all member countries of CIM and SMGS.

In Ukraine, thanks to the work carried out for many years implementing modern EDI with neighbouring countries, the use of the single CIM/SMGS consignment note is somewhat an old story already as it has been increasingly used for the consignments shipped on the fast transit railway lines crossing the country from West to East and South to North (e.g. Viking from Llhychevsk to Klaipeda via Minsk reportedly travelling at 890 km/day in Ukraine, Romania to Russia - 920 km/day, Czech Republic and Slovakia to Russia – 1,300 km/day).

The number of such bills rose from 3,924 in 2007 (out of which 1,570 containers) to 35,308 in 2012 (out of which 5,295 containers) and 38,867 (out of which 11,052 containers) have already been issued for the first eight months of 2013.
6 TARIFF POLICIES

In the TRACECA countries rail transit tariffs are set according to the so-called MTT (Russian abbreviation for International Transit Tariff) scale, which is revised twice yearly within the OSJD forums. These scales are still partly based on the outdated costing methodologies dating from the Soviet centralised planning era. They allow heavy discounts, which compensate to some extent the lack of rational costing, and give the railway companies some commercial flexibility. It is therefore a common practice to have a differentiated tariff structure: a tariff for international movements and a tariff for domestic movements that is largely discounted (sometimes 1/3 of the international tariff). In general high transit tariffs appear to cross-subsidise domestic traffic. Altogether, however, there is no consensus between the TRACECA countries on tariff matters and rebates to be applied for transit cargo.

Recently the EurAsEC countries (Belarus, Kazakhstan, Kyrgyzstan, Russia and Tajikistan) have ratified an agreement to unify their railway tariffs from the 1st of June 2015. The railway tariff ceilings will be established in accordance with the national laws and international agreements. As from the 1st January of 2013, instead of export, import and domestic tariffs, a single tariff is commonly applied by each state-member of the Common Economic Space (CES) according to one of the key agreements on the CES on the regulation of access to rail transport, including the basis of the tariff policy, signed between Russia, Kazakhstan and Belarus in 2010. Single tariffs do not apply to goods in transit. Each participating country pursues unification gradually and independently. Tariffs shall be set in accordance with the national legislation of the parties with the possibility of tariff differentiation based on goods category, wagon type, transportation distances and wagon loads. Unification of tariffs is designed to optimise logistics costs while boosting competitiveness in foreign markets and making access to the common market for products from third countries more difficult.

The cost of delivery of goods on the TRACECA rail corridors is often dependent on the distance, the shipment size and the nature of cargo. It is also highly dependent on the number of countries involved in the cargo delivery, the number of borders to cross and the bilateral agreements between the countries. The parties within TRACECA signed an agreement relating to certain benefits and reduced tariffs (e.g. up to a 50% discount on rail freight and ferry transportation of empty wagons; abolishment of taxes and fees on transit cargoes). As no fixed discount on tariffs has been agreed upon (unlike the agreement concerning the VIKING train from Ukraine to Lithuania) the provisions of this Appendix are not binding. As a result, although this agreement is in effect as of 23 November 2011, in practice the composition of the rail tariff remains opaque and is subject to changes on short notice. Furthermore, neither Kazakhstan, nor Turkmenistan (the main TRACECA railway transit countries on the Central Asian shore of the Caspian Sea) are part to this agreement. Fluctuating tariff establishment is the general concern of all railway operators and freight forwarders in the region. This makes it nearly impossible to forecast prices for the mid and long term. The lack of coordination between

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31 The agreement on regulation of access to services of the rail transport, including bases of tariff policy, December 2010.

32 Appendix 2 to the Technical Annex on International Railway Transportation to the Basic Multilateral Agreement on International Transport for Development of the Europe the Caucasus - Asia Corridor of 9 October 2003 (in effect as of 23 November 2011 with respect to the Republic of Azerbaijan, the Republic of Bulgaria, Romania and Georgia). Not to be applied with respect to the Republic of Kazakhstan in accordance with the Reservation to the Basic Multilateral Agreement.
the TRACECA beneficiary countries on railway tariff harmonisation matters is one of the significant constraints for competitiveness of the corridor.

It is important to quote prices to the clients transparently, making them confident of being treated equally, and providing competitive prices that are within market limits.

In general, container rail transport in the TRACECA countries remains very expensive and there is a large gap between the tariffs for the carriage of the same goods in wagons in bulk or break-bulk and on platforms in containers (the latter being 2 to 4 times more expensive). Moreover, there is no single operator able to quote and guarantee a price all along the corridor. State railways give rail tariff rates only for carriage on national wagons and platforms: GR being, for instance, unable to guarantee the availability of wagons belonging to Central Asian countries at the time of shipment from Georgian ports, is giving rates to Central Asia based on the use of Georgian wagons, which include the return of the empty wagons to their depots in Georgia[^33].

Reportedly delivery of services by the railways in most countries very often requires also illicit payment to obtain wagons in time, suitable condition and sufficient number or to expedite customs clearance. This significantly increases the final transport costs.

Besides the conditions of carriage, delivery at the final destination (including description of available technical facilities) and liability of the various parties involved remain unclear for the users.

The set-up of a unified easy-to-use through tariff is one of the key issues in the creation of a competitive route. Azerbaijan, Kazakhstan, Georgia and Turkey will introduce a single tariff for the transportation of containers within the project Silk Wind, allowing transparency of the tariff policy and creation of a confident dialogue with the business.

The policy requiring freight tariffs to cross-subsidise passenger services, adopted by most of the TRACECA countries, will need to be reconsidered in view of the international corridors integration as it is not commercially sound. The alternative way of financing the passenger services through Government support, such as public service obligation grants (PSO), in line with EU best practice, should be considered.

Summarising what has been said above in this chapter the following key issues need to be addressed to enhance the competitiveness of the TRACECA rail corridor:

- lack of common basis between railways for calculation of the tariff;
- lack of coordination between railways to change the level of tariff;
- differences between domestic, international and transit tariffs’ levels;
- lack of coordination policy for discounts except to some big freight forwarders, who then are the only ones to propose prices;
- differences of tariff levels for wagons and containers;
- impact of the change of wagon fleets status on international prices.

[^33]: The same problem exists in the Baltic ports. It is related to the status of wagon fleets. Even if they are publicly owned, they are operated as private wagons, which involve payment for return of empty wagons. This was not the case for wagon fleets operated as publicly owned inventory fleet.
7 ONGOING PLANS, PROJECTS

TRACECA countries have the duty to bring a major contribution to the development of the transport system linking Europe and Asia. The investments allocated to infrastructure projects have a special importance in building missing links and upgrading the existing one, the railway network being one of the key components of the transport system in this region.

There are a lot of ongoing initiatives and projects for the modernisation and rehabilitation of the railway infrastructure within the TRACECA region. The majority of these projects have a national character, but some projects are aimed at eliminating missing links and bottlenecks in terms of creating integral rail bridges between East and West. Some are aimed at creating new railway lines and some are focused on upgrading the existing infrastructure.

This report mostly deals with the rail projects relevant for TRACECA in the corridor perspective. Other national projects are described in the LOGMOS Country Profiles.

New Railway Line between Zhezkazgan and Beyneu in Kazakhstan

A new line is being built from Beyneu to Zhezkazgan to reduce the distances between central and west regions of Kazakhstan and the route from PRC to Aktau port. This will be a 988 km double track railway line which will shorten the route by about 1,000 km and reduce the transit-time by 3 to 5 days; the implementation of this project is planned for 2012-2016.

The Silk Wind Block Container Train

This Project results directly from the one mentioned above.

On 28 November 2012, in Izmir, Turkey, the Ministers of Transport of the four participating countries – Azerbaijan, Georgia, Kazakhstan and Turkey – signed the 'Memorandum of Understanding on the principles of joint activity on the development of transport networks and organization of cargo transportation'. This document fixes the intentions of the Parties regarding the Silk Wind Project related to the creation of a block train operating in multimodal transport with preliminary information exchange system between customs services and railway operators of the Project participating countries.
It is assumed that a full package of logistic services will be provided in the countries situated along the route. The contemplated trade facilitation measures aim at increasing the commercial potential of the TRACECA transport corridor as well as expanding multimodal transport volumes in the region.

The block train will run from the stations Dostyk/Altynkol (on the Kazakhstan/PRC border) through Zhezkazgan - Beyneu to the ports of Aktau and Baku, further along the railway line Baku-Tbilisi-Kars then through Turkey and approach the European border through the railway tunnel under the Bosphorus. The total length of the route is 4,192 km with an estimated transit time of 12 days. The Project is based on the successful implementation of new infrastructure objects: the straightening railway line ‘Zhezkazgan-Beyneu’ (Kazakhstan), the new port of Baku at the International Sea Trade Port of Alyat (Azerbaijan), the nearly completed railway line Baku-Tbilisi-Kars (Azerbaijan, Georgia, Turkey) and the ‘Marmaray’ railway channel line (Turkey).

This link will provide an alternative route to all-sea transport and a direct and 2.5 times quicker overland connection between the big manufacturing regions in Western PRC and good-consuming countries in the EU and Turkey.

Kazakhstan, which is the initiator of the project, is ready to sign the intergovernmental agreement on the Silk Wind project, as well as Azerbaijan. In their turn, Turkey and Georgia are still in the process of the internal coordination of this issue.

**Construction of New Railway Line Baku-Tbilisi-Kars (BTK)**

This track will directly connect Kars in Turkey, Tbilisi in Georgia and Baku in Azerbaijan. It is expected to be fully operational in 2014. The total estimated cost of the project is USD 1 bn. For the construction of the railroad on the territory of Georgia, Azerbaijan provided a USD 775 M loan, repayable in 25 years, with an annual interest rate of only 1%. Turkey and Azerbaijan fund their own sections.
The new railway link is intended to provide an alternative route to the existing Kars-Gumri-Akhalkalaki railway line which has been out of use since 1993, when Turkey closed its border with Armenia. In total 98 kilometres of new line will be built between Kars and Akhalkalaki, with 68 kilometres within Turkey and 30 kilometres in Georgia. The existing line from Akhalkalaki to Tbilisi and Baku is being modernised. A break-of-gauge facility (from 1,520 mm to 1,435 mm) will be constructed at Akhalkalaki station. The missing Kars - Akhalkalaki section was planned to be completed by the end of 2013, but certain delay occurs. For the sake of enhancing the train handling capacity on the main double-track line of the TRACECA railway route, a single track railway bridge Poylu - Salogly is being reconstructed into the double track bridge.

The new Georgian government formed at the end of 2012 has questioned the thrice increase of the project costs (from USD 220 M to USD 775 M), which entailed delays in project realisation. The delays were also caused by the complex mountain relief in Georgia and Turkey and construction of a 2.07 km long tunnel through the Georgian-Turkish border (the initial length of the underground section, 1.2 km, had to be increased due to the change in the point of junction of the Georgian and Turkish sections). Originally in 2007 it was planned to open the line in 2010. The Russian-Georgian war of 2008 caused a first delay and the launch of operations was re-scheduled for 2013. In August 2013 the schedule had to be revised again.

The works are being implemented according to a revised schedule and due for completion and testing in 2014 with actual start of transport operations in 2015. As of October 2013, two phases of railway's construction have already been completed, and works are being carried out as part of the third phase. According to experts' forecast, the BTK railway line will transport 1 M Pax and 6.5 Mt of cargo in the initial stage. By 2030, the line should carry an estimated 17 Mt of cargo and about 3 M Pax.

The key objective of the project is to improve trade and economic relations between the three regions and to gain foreign direct investment by connecting Europe and Asia. The project will facilitate transportation of passengers and goods, principally oil and grain. Combination of a
flexible tariff policy and customs procedures compliant with the European standards and a shorter route for cargo transportation compared with sea routes from Asia to Europe may transfer a relatively small project into a strategically important one in terms of international trade.

As an alternative to the Trans-Siberian railway, BTK will diminish the dependence of European countries on Russia and will further contribute to the development of a transit corridor between Azerbaijan, Georgia and Turkey, thus strengthening the economic and political ties among these countries. The promoters of the Baku - Tbilisi - Kars Railway projects see it as a part of bigger project that foresees the connection of the South Caucasian railroads to Europe through Turkey via the ‘Marmaray’ tunnel under the Bosphorus Channel34.

Construction of the New Baku International Sea Port in Alyat, Azerbaijan

In order to boost activity and increase freight volumes, the Ministry of Transport in Azerbaijan launched plans to move the port of Baku to another location 65 km south of the city, in Alyat, by 2015. The new location is at the junction of two major transport corridors: East-West and North-South, an area where the Azerbaijani railway and road networks intertwine.

The new International Port of Alyat will be built in three phases on a total surface of more than 400 hectares, 100 of which will be dedicated to an international logistics centre. In the first phase, the construction project cost is USD 726 M. Development works were initiated at the end of 2010.

The estimated volume that will be handled by 2015, at the end of the first construction phase, is 10 Mt including up to 40,000 TEU. In the second phase the volumes will amount to 17 Mt and 150,000 TEU, while in the third and last phase it should reach 21-25 Mt and 1 M TEU.

The new port will help improve the intermodality of container transport on the TRACECA Corridor and will also contribute to the development of new logistics services, which will increase the attractiveness of the TRACECA route and reduce travel time and costs.

Modernisation and Extension of the Port of Aktau, Kazakhstan

A project to expand the sea port of Aktau in the northern direction that involves several stages is under implementation now. This combined with the modernisation of the existing equipment and introduction of new technologies and management systems will raise the total capacity of the sea ports in Kazakhstan from 14 Mt to 17.5 Mt. Nothing has yet been planned for enhancing the handling capacity of the port as far as rail-ferry and Ro-Ro trades are concerned. In April 2013, KTZ and the Arabic company DP World signed letters of intention for the management of Aktau seaport and social economic zone Khorgos-Eastern Gates.

For Armenia and Georgia, the maritime links through the Black Sea and the land connections via Turkey and further via Turkish ports are of utmost importance to ensure a seamless trade-flow with Europe and the rest of the world.

For Georgia, the development of the Trans-Caucasian east-west axis, linking the Black and Caspian Sea provides significant benefits whilst adding considerable value to the TRACECA corridor as a whole.

34 A ceremonal test train ran through the Marmaray tunnel between Kazlıçeşme on the European side of Istanbul and Ayıllıkçeşme on the Asian side on August 4, 2013. Inauguration ceremonies for both the Marmaray tunnel and the high speed line between Eskeşehir and Gebze to the east of Istanbul are scheduled for October 2013. However, according to the Turkish freight industry, the tunnel could not be used for cargo transportation before late 2014/beginning of 2015.
Rehabilitation of the Main Railway Line Yerevan - Tbilisi

Armenia is in need of rehabilitation to its infrastructure and the cost of the ongoing projects is expected to hit EUR 1 bn. Due to the fact the borders with Turkey and Azerbaijan are closed, only the South Caucasus international railway connection with Georgia is in operation.

The remaining three border-crossings (two to Azerbaijan and one with Turkey) are temporarily closed. International traffic flows to and from Armenia therefore move mostly via the Georgian ports of Poti and Batumi\(^{35}\). Maintaining this vital link is a priority task for SCR and a major programme of infrastructure overhaul is ongoing (308 km of railroad, representing nearly half of the total country’s network, are under rehabilitation as well as the 8 bridges on the track from Yerevan down to the Georgian-Armenian border).

The EBRD is financing the construction of a new bridge at Bagratashen, the main border crossing point between Armenia and Georgia. A EUR 10.3 M loan agreement with EBRD has been ratified in May 2013. This is a part of a big investment program aimed at modernisation of 3 border crossing points with Georgia (Bagratashen, Bavra and Gogavan), with the total cost of EUR 62.6 M.

The 2011-2012 slapdash privatisation of the rolling stock by UZ in Ukraine has made wagon supply harder which has negatively affected the trade with Armenia. Thus, the number of wagons moving from Ukraine and Bulgaria to Armenia via Poti and Batumi decreased during the last years as follows: 2010 – 5,568, 2011 – 4,050, 2012 – 3,924\(^{36}\).

In the meantime, SCR has upgraded the existing block container train service between Poti and Yerevan Karmir Blur railway station: in lieu of the former twice-a-week service (on Tuesdays and Fridays), SCR is now offering a daily connection to Tbilisi, Poti and Batumi using both GR and SCR platforms. Besides, SCR provides a reefer container service deploying 12 specialised platforms per train. The trains perform the 660 km run between Poti and Yerevan in about 29 hours at an average driving speed of 32 km/h and the average turn-time per container Poti-Yerevan-Poti is 12 days.

Other Projects of Regional Importance in Armenia

Another important project is the Vanadzor-Fioletovo railway line (32 km) which is primarily aimed at improving Armenia’s transit potential and increasing its economic and political competitiveness at regional and international levels. The construction of this track will enable to connect Ijevan-Hrazdan-Yerevan to Tbilisi-Ayrum-Gyumri-Masis. The estimated cost of the project varies within USD 250-500 M. The launch of transport operations on this line, as well as the construction of a logistics centre ‘Akhuryan’ on the Armenian-Turkish border will contribute to enhance the attractiveness of TRACECA corridor.

\(^{35}\) A small part moves via Iran mostly through the port of Bandar-Abbas.

\(^{36}\) The drop was especially sharp in the last months of 2011. There was a very partial recovery in 2012.
One of the most important international rail projects initiated by Armenia is the construction of the **railway line to Iran**. The project envisages a 500-km railway line along the route Gagarin-Gavar-Martuni-Jermuk-Kapan-Meghri-Iranian city Merand connecting Armenia with neighbouring Iran. The Armenia-Iran railway line will provide landlocked Armenia with an alternative way to transport energy products and other goods to and from the outside world. According to the preliminary agreement, Iran will provide Armenia with access to the Persian Gulf. The project cost is estimated at about USD 2 bn while the construction should take 5 years. After searching for reliable financing sources, such as potential investors and companies from Russia and China, the agreement has been signed with an Arab company, Rasia FZE, based in Dubai (UAE). The Memorandum of Understanding signed by the three parties includes another project, the development of a road high-speed connection, the cost of the two projects, railway and road, amounting to USD 3 bn. The project will be developed based on a public-private partnership and the new line will be operated by SCR.
Figure 8: Caucasus Railway Network

Poti-Baku Container Block-Train
This is the backbone project linking the Black and Caspian Sea for container trade flows. German-Polish freight forwarder Polzug attempted to run the first block train operation on this route in 2009. The goal was – and still is – to build up rail container traffic between Poti and Baku to a fixed timetable as quickly as possible. From Baku onward shipment is by feeder across the Caspian Sea to Aktau, where railcars provide further transportation towards Central Asia. An attempt to run regular scheduled container trains was made in 2012. Being however operated separately by GR and ADY on both sides of the border because a single tariff and streamlined procedure could not be agreed upon, the operation still not qualifies as regular Block-Train one.

Tbilisi-Poti/Batumi Railway Line Modernisation Project
The aim here is to increase traffic capacity and reduce travelling time between the Poti/Batumi ports and Tbilisi. The project implies the complete modernisation of the current railway infrastructure and an upgrade of the line to the speed of 120 km/h. The project is scheduled to be completed in 2013. This should also help to improve the performance of the Poti-Tbilisi block container train that runs every other day by GR.37

Tbilisi Railway Bypass Project
The USD 350 M worth Tbilisi bypass project, financed for one-third by the EBRD and another third by the EIB, was initiated by the former government to move rail traffic outside Tbilisi centre

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37 Since GR took this operation over from Intertrans, simplified the procedures, trimmed the tariffs to match the competition of the road transport and transferred the handling operations from the congested Tbilisi city center to an outside location at Veli, not far from the airport, the volumes handled have drastically increased: Poti-Tbilisi from 4 173 TEU in 2011 to 8 387 TEU in 2012 and Tbilisi-Poti from 5 089 TEU in 2011 to 8 295 TEU in 2012.
to improve the efficiency and safety of rail operations as well as overcome environmental issues and vacate about 83 ha of land in Georgian capital for urban renewal projects. The bypass railroad comprised the construction of a 30 km long double track of new lines and the reconstruction of 10 km of existing line that already bypasses Tbilisi. It also included the construction of a new freight station, the upgrade of a number of existing stations, rehabilitation of the existing single track lines and construction of an additional new single track line. But the project stumbled on technical matters which the tender-winner (and lowest bidder) had not been paying enough attention to. A feasibility study carried out by Vienna-based MC Mobility Consultants GmbH concluded that it would bring losses rather than profits due to much increased maintenance and operating cost, complicated railway traffic management and decrease in the railway line capacity. However, as nearly 60% of the project has already been completed and USD 213 M spent (as of October 2013), the government is reconsidering the project in order either to make it more cost-efficient or cancel it for good. Till then, the bypass project is suspended.

The Tbilisi Rail Node

As long as the borders between Armenia and Azerbaijan and Turkey remain closed and as long as the situation of Iran does not improve on the international political scene, Georgia will retain a key role as transit country to its Caucasian neighbours and, increasingly, to Central Asian countries.

At the same time the ongoing rail projects at national and regional levels all include a leg in or via Georgia, specifically through Tbilisi:

- Poti/Batumi-Tbilisi;
- Poti-Tbilisi-Yerevan;
- Baku-Tbilisi-Kars; and
- Silk Wind.

Due to these favourable conditions, there is a unique opportunity for Georgia to create a major rail node in or near its capital city where all these rail lines intertwine.

At the same time there is no state-of-the-art large-scale logistics centre in Tbilisi. The government has been considering various projects including one proposed by the previous EU-funded TRACECA Project ‘International Logistics Centres (ILC) for Western NIS and the Caucasus’ (and still promoted by the LOGMOS Project) but to date no development has taken place.

Combining the traffic-flows generated by the above-mentioned lines to a single rail terminal, which would double with a fully-fledged ILC, would definitely bring considerable benefits for Georgia in terms of employment and revenues and would also strengthen its pole position as a transit country.

Rehabilitation of the Baku - Georgian Border Railway Section

In Azerbaijan, the ongoing (2008-2017) Railway Trade and Transport Facilitation project (financed by the World Bank and the Azerbaijani Government) includes the rehabilitation of the Baku - Georgian border railway section and the procurement of new electric systems. This should result in an increase of the maximum speed of the train up to 160 km/h and a reduced travel time from Baku to the border to 7-8 hours (from present 14-16 hours). The electrification system will be converted from the 3 kV DC to the 25 kV AC 50 HZ current and the signalling equipment will be upgraded. A feasibility study and design works for the power supply system conversion have been completed, Bombardier won the first major signalling contract in Azerbaijan.
The line capacity should be improved to 60 pairs of trains after the rehabilitation. The main component of the modernisation project is the rehabilitation of the East-West Main Line Baku – Beyuk - Kyasik as part of the Baku-Tbilisi-Kars transport corridor on about 317 km railway lines included in the government programme. The capital repair of the Baku – Beyuk-Kyasik line is financed through a loan of USD 215 M allocated by the Czech Exim Bank. Upon completion of repair works trains will be able to reach speeds of 160 km/h. As of September 2013, over 250 km of the railway have been repaired. Construction of a new 240 km railway line from Nakhichevan (AZ) to Kars (TR) will most likely begin after completion of the Baku-Tbilisi-Kars railway. Another 240 km tracks needs rehabilitation. The total estimated cost makes about USD 1 bn. The development of infrastructure in Turkey is expected to be funded by the extension of credit from the Azerbaijan Oil Fund.

**Potential reopening of the railway link to Russia through Abkhazia**

Soon after the parliamentary election in 2012 Georgia’s new government started studying the issue of reconstructing and reopening the former railway communication link with Russia through Abkhazia, which was interrupted as a result of the Georgian–Abkhaz war in 1993. The initiative is part of a broader Georgian foreign policy strategy aimed at re-establishing political and economic relations with Russia.

**Other Completed and Ongoing Rail Projects in Kazakhstan**

Among the recently completed rail projects in Kazakhstan are the construction of the 293 km line Zhetygen (50 km north of Almaty) - Korgas and the 146 km line Uzen - Bolashak Turkmen border railway station in 2011. The latter gives direct access to Turkmenistan, Iran and the Persian Gulf countries. The railway line Zhetygen - Korgas opens a second crossing point with PRC and makes it possible to increase cargo transit from PRC to Europe and to reduce the distance of freight transport by 500 km in the direction of Asia - Europe.

In January-April 2013, the trade volume between China and Kazakhstan through the checkpoint Khorgos reached USD 7.18 bn. This is 26.9% more than during the same period in 2012. Chinese exports to Kazakhstan for the first four months of this year amounted to USD 2.88 bn, which is 38.3% more than the year before. Kazakhstan exports to China increased by 20.2%, reaching USD 4.3 bn.

In 2012, the construction of the 214 km railroad Arkalyk (Kostanay Oblast’) - Shubarkol (Karaganda Oblast’) started. This will reduce the northward transport distance by 700 km, from
the Shubarkol open-cast (energetic) coal mine to power plants in southern Russia as well as from the adjacent ore fields.

KTZ, together with the French company Systra, will soon start implementation of the largest project in the history of the country’s railways, which involves building of a 1,100 km long high-speed railway line between Astana and Almaty. The total volume of investments in the construction of this new railway line will amount to USD 600 M. The maximum speed on the line will be 250 km / h. The project is scheduled for completion in early 2017.

Altogether Kazakhstan plans to build 2,500 km of new railways in 2013-2015.

Figure 10: North-South Transnational Rail Corridor

By the end of 2013 Kyrgyz Railway (KTJ) aims to carry out a final comprehensive feasibility study for a new cross-country electrified line that will open up the country to transit traffic between PRC, the Persian Gulf and Europe. Reportedly, the construction of the new line, which is estimated to cut the rail distance between PRC and Europe by 900 km, might begin by 2014. The management of KTJ strives to develop transit routes through Kyrgyzstan replacing the
existing dead-ends, moving closer to the markets of the Persian Gulf countries, as well as Iran and Turkmenistan. After building the new line, KTJ’s existing Balykchy - Kochkor and Karakeche - Arpa - Kara Suu lines will be connected for the first time providing improved transport links across the country for both passenger and freight services.

Two new railway projects have been under discussion recently: Tajikistan-Afghanistan-Turkmenistan and Uzbekistan-Kyrgyzstan-China-Afghanistan-Iran. It is noteworthy that the two railway lines will be built to the narrow-gauge European standard.

The construction of a 270 km Trans-Asian railway corridor connecting China, Kyrgyzstan and Uzbekistan, which for a long time has been on the agenda, will start in 2014. The total cost is estimated at USD 4.5 bn. If built, the railway line would go from Kashgar in Xinjiang, through Torugart transcending the Tuz-Bel pass, through the Arpa River valley and Ferghana range, reaching Kara-Suu on the Uzbekistan border then on to Andijan, and across Afghanistan, Iran and Turkey as far as Europe. The line should pass through 48 tunnels with a total length of 48.9 km, the longest being the Ferghana’s at 14.1 km, and requires the construction of 95 bridges with a total length of 20.9 km. In addition, due to the gauge differences between China and Kyrgyzstan, a bogie changing station will be built near the Tuz-Bel mountain pass where freight and containers will also be weighed and sorted. It is forecasted the railway could carry up to 5 Mt of freight during its first year of operation, and 15 Mt when the line is fully operational. In Kyrgyzstan, the project raises both fears of PRC’s expansion and hopes that the land-locked republic would finally have a shot at integrating with the global economy.

Dushanbe had an opportunity to join the international China-Afghanistan-Iran railway project. Local authorities had hoped that it would go through Tajikistan and commissioned the Iranian company Metra to do a feasibility study for its section of the line. The Iranian engineers designed a rail line 392 km long with tunnels and 47 bridges. It was reported in February, however, that Kyrgyzstan and Uzbekistan had joined the project and Tajikistan had been dropped because it would be cheaper to build the railway through Uzbekistan, which has a smoother terrain and an easier route. China is funding the project, and it finds Uzbekistan more interesting from an economic standpoint than Tajikistan.

Therefore, Tajikistan is actively promoting the Tajikistan-Afghanistan-Turkmenistan project. In March 2013, the MoU on the construction of the railway was signed between the three countries. Tajikistan, experiencing a shortage of energy resources, would get access to the energy resources of Turkmenistan, including fossil fuels. It would benefit tremendously by overcoming its current transportation deadlock and its dependency on Uzbek railroads for transit. Relations between the two countries have been strained for an extended period of time. The project, estimated at USD 1.5 – 2.0 bn, aims to lay a line of around 350-400 km by 2015 linking the neighbours’ existing rail networks to other parts of Eurasia. The construction of the Turkmen section of the railway is reportedly in progress, preliminary works on feasibility study of the 355 km Afghan section have been completed and the construction shall start in about a year time. Gas-rich Turkmenistan plans to finance the construction of the segment in its territory independently, though it will seek external funding for other infrastructure.

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38 At the moment there are in fact two options under I discussion: the construction of a 257 km long railroad with a total investment volume of USD 4.5 bn, or a 430 km long railroad worth USD 6.6 bn.

39 To give an order of magnitude the PRC is planning to invest USD 104.5 bn in its domestic rail network only, laying down 52,000 km of track (20% more than the whole Canadian network) in 2013.
Turkmenistan launched the construction of its portion of the Kazakhstan – Turkmenistan – Iran transit corridor which is being developed under a 2007 agreement between the three countries as a part of the transport corridor ‘North-South’. Over 700 km of this 900-km line pass through Turkmenistan. In May 2013 the Turkmen-Kazakh railway section was opened. Currently, the construction units of the Ministry of Railway Transport of Turkmenistan continue construction of the Southern stretch (256 km long) from Bereket to Etrek on the Iranian border, which shall be completed in 2013. In Iran, the railway will be linked to the national network making its way to the ports of the Persian Gulf. Bogie changing facilities are to be provided at the break of gauge in Incheh Borun. The project is estimated to cost USD 760 M and is jointly funded by the governments of the three countries. In October 2012, Turkmenistan also launched construction of the first link of the international railway Atamirat-Imamnazar (Turkmenistan) - Akina - Andkhoy (Afghanistan). The new line shall be put into operation in June 2015.

Uzbekistan: UTY plans to build an extension of the existing 75 km Hairatan-Mazar-i-Sharif railway in Afghanistan. The project, which aims to be completed between 2013 and 2015, would boost economic ties with Afghanistan, analysts say. Notably, Afghanistan, devastated by decades of foreign occupation and civil war, has been regularly experiencing difficulties in sending cargo through the borders of Iran and Pakistan, and consequently, is interested in alternative transport routes. In January, UTY announced plans for a USD 450 M 230 km-long track extension that would connect Sher Khan Bandar to a Tajik-Afghan border checkpoint on the Panj River and with the existing track in Mazar-i-Sharif. From there, the track would go to Herat, where it would link to a still-incomplete track that should one day lead to the country's western border. The project would be developed and financed under the CAREC (Central Asia Regional Economic Cooperation) Programme.

Uzbekistan also plan to launch various railway electrification projects. The most important of them is the Marokand-Karshi line (140 km) and Karshi-Termez line (325 km), part of Corridor 6.
CAREC. The line, to be electrified, links Europe to Middle East and South Asia through Central Asia and has a capacity of 100 Mt per annum. The north section of the Corridor is electrified and currently operates electric locomotives. The rest of the line is soon to be electrified. The projects include the construction of the catenary system, several traction substations (3 for Marokand-Karshi and 6 for Karshi-Termez route), the acquisition of the control system for the power supply and the modernisation of line equipment. Moreover, the authorities will purchase the interlocking system and communication systems for facilitating the efficiency of operations. The total volume of investments is estimated at USD 320 M, out of which up to USD 220 M will be provided by JICA, and the remaining USD 100 M by ADB. The funds for the project could be partly provided by UTY itself. Earlier this year, the Uzbek government has accelerated the timescale for the electrification of the Marokand – Karshi line, with completion now envisaged for 2014 rather than by 2016. The implementation of the projects will link Tashkent with southern city of Uzbekistan – Termez, enabling to speed up transportation time, save fuel and improve security. It will also increase the capacity of the line 2.5-3 times.

Uzbekistan backs the project of construction of the PRC - Kyrgyzstan - Uzbekistan railway line. The next step would be the construction of Angren – Pap railroad which would logically complete the railway map of Uzbekistan. It was reported that the 129 km Angren-Pap railway line worth USD 1.9 bn should run through the Kamchik pass and link the three oblasts (regions) in the east of the country – Andijan, Namangan and Fergana – with the remaining part of Uzbekistan. The construction of this road with the participation of Chinese partners was launched in June this year and is scheduled to be completed in 2016. Within this project, China Railway Tunnel Group will construct a tunnel worth USD 455 M connecting the Fergana Valley with other regions of Uzbekistan.

**Rail Projects in Moldova**

Moldova, being a more transit country, envisages a series of important railway infrastructure projects, first of all, increasing the traffic speed of freight trains crossing the country, e.g. the speed on Galati - Giurgiulesti - Port of Reni line, as well as on Ungheni - Iasi - Jiia line.

One of the important projects involves linking Chisinau to the city of Iasi through a standard gauge railway line.

Construction of the European line to Giurgiulesti, including terminal facilities has been accomplished in September 2013. This line connects Giurgiulesti to the Romanian city of Galati.

An extension of the line Cantemir-Cahul south to Giurgiulesti has been implemented, which provides a direct link between Chisinau and the port to allow for railway operation to the port instead of exclusively trucking. The line via Cahul lies on Moldovan territory, exclusively, while the other rail connection to Chisinau goes via Reni some 35km on Ukrainian territory (again an issue of tariffs to be applied).

With a new director elected in August 2013, the issue of establishing a regular block train service to Chisinau, connected to the schedule of the container line is under discussion and seems promising.

The construction of the European gauge line and the electrification of Chisinau-Ungheni line section are expected to amount to USD 400-536 M and the acquisition of rolling stock requires additional investments of USD 135 M.

The EBRD is lending USD 12 M to Danube Logistics, the owner and operator of the Giurgiulesti International Free Port, to finance the construction of a mixed gauge rail terminal in Moldova. The funds will be used to improve the overall standard of the port infrastructure as well as to complete the railway link to the terminals that handle containers, general cargo and dry goods shipped in bulk such as grain and coal. As a result, transshipments onto and from railway
wagons will no longer require internal transfer by truck and will avoid multiple lifts by cranes, making port operations much more cost and time efficient for Moldovan businesses.

As part of the programme for the attraction of goods to railways, Giurgiulesti Port collaborates with CFM (Moldovan Railways) within the container block-train ‘ZUBR’ project which ensures the transport of cargoes on the Black Sea-Baltic Sea Corridor (containers will be shipped by rail from Giurgiulesti to Ukraine, Poland, Belarus and the Baltic countries). According to estimates, 6,000 containers will be shipped on this route in 2013. Implementation of the ZUBR project allows carriers to transport goods at reduced rates, same for all participating countries, and get an additional discount of 20% of common tariffs for import-export traffic. Simplified customs procedures and border inspections are applied. This allows the train to overcome the route length of more than 2,000 km in 58 hours which is half as long as by road.

**Rail Projects in Ukraine**

**Ukraine** is willing to capitalise on its well-developed transport network and its geographical location to enhance its role as a transit country in Eurasia. It therefore initiated a programme of investments in railway infrastructure, as well as in the purchase of freight and passenger rolling stock. The reconstruction of six railway stations and six railway complexes was conducted in 2012. Transit traffic was 70 Mt in 2008 mainly in relation with the Ukrainian ports, compared to UZ freight business of 400 Mt and 250 bn tkm in total. However, volumes of transit cargo by Ukrainian railways declined by 17.9% down to less than 40 Mt in 2012 and by 21.9% in January-August 2013 against the same period of the previous year. This is one of the lowest figures for the last several years.\(^{40}\) The decline mostly takes place in case of Russian cargo, which traditionally accounted for about 70% of all transit through the Ukrainian territory. Ukrainian analysts believe that the main reason for such a situation is non-competitive tariffs. Currently, the government is designing a set of measures, aimed at finding a way out of the current crisis. In 2013, Ukrzaliznytsia organized information exchange with railway administrations of neighbouring countries. Also, reduced tariffs (up to 50%) were introduced for container transportation, additional duty rates were cut for the reload of transit cargoes, etc.

UZ started building the new 1.8 km-long double-track Beskyd tunnel on the Lvov-Chop line in the Western Ukraine Carpathian Mountains for which Interbudmontazh/Kiev secured in 2011 a EUR 102.7 M contract for design and construction. The tunnel, scheduled to open in 2015, will allow an increased speed of 70 km/h. This tunnel will replace the existing single-track tunnel built in 1886, which is a major bottleneck on the route. Now 40% of goods in transit to Western and Central Europe pass through the old tunnel, but its service life has already ended.

The project of electrification of the Dolynska - Nikolayev - Dzhankoi route is budgeted at USD 701 M. Work is scheduled for 2013-2016.

UZ has applied for financing to the EBRD and intends to use the proceeds for a project to acquire general purpose freight wagons with a total estimated cost of USD 125 M.

The EBRD is considering participating in the financing of the railcar acquisition programme of the Ukrainian New Forwarding Company (‘UNPK’), the Ukrainian subsidiary of Globaltrans Investment Plc. (‘GTI Group’), a freight rail group with operations in Russia, CIS and Baltic countries. GTI Group development programme aims to capitalise on the successful operational track record in the region to date, as well as on strong demand for railcars in Ukraine and other

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\(^{40}\) This issue is tackled by the new LOGMOS pilot project ‘Transit Ukraine’.

\(^{41}\) UZ runs 14 container block-trains, 9 being only in transit through Ukraine. It carried 58,000 containers in total the first 9 months of 2013 out of which 40% on block trains.
CIS countries. The total investment volume is USD 33 M, with a foreseen EBRD-share of USD 7 M.

The railways rolling stock renewal project will enable the company to finance the acquisition of general purpose freight wagons, an integral part of a multi-staged Rolling Stock Renewal Programme, to renovate Ukraine Railways’ ageing fleet, which has become a critical bottleneck of the country’s transport system as the shortage and poor state of the freight rolling stock is now a potential threat to continued growth of the national economy. The total investment volume is USD 441 M with a planned EBRD participation of USD 125 M. It is expected that the European Investment Bank will provide parallel debt financing.

Ukraine plans to facilitate the settling of customs clearance procedures at the Odessa region checkpoints for container shipments by rail. Today, the containers pass through customs clearance twice – at checkpoints at Odessa, Ilyichevsk and Yuzhny seaports and at the Odessa-Lisky checkpoint. In addition, the goods between checkpoints of the seaports and the Odessa-Lisky are moved in the transit regime and the submission of a customs declaration is required. The proposed amendments will allow the customs clearance of containerised goods only once at the Odessa-Lisky container terminal.

This should also help promoting the carriage of containers from ports by rail, an alternative most users decline today citing these too complicated and time-consuming procedures, the lesser safety of rail than road transport and, above all, the uncertainty linked to the time needed for the customs clearance process as a whole which, in most cases, makes it impossible for them to order the platforms in due time.

Finally UZ is drawing plans to differentiate traffic directions mainly for passenger and cargo transportation, as well as to redirect the flow of goods to idle or low-intensity lines.
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