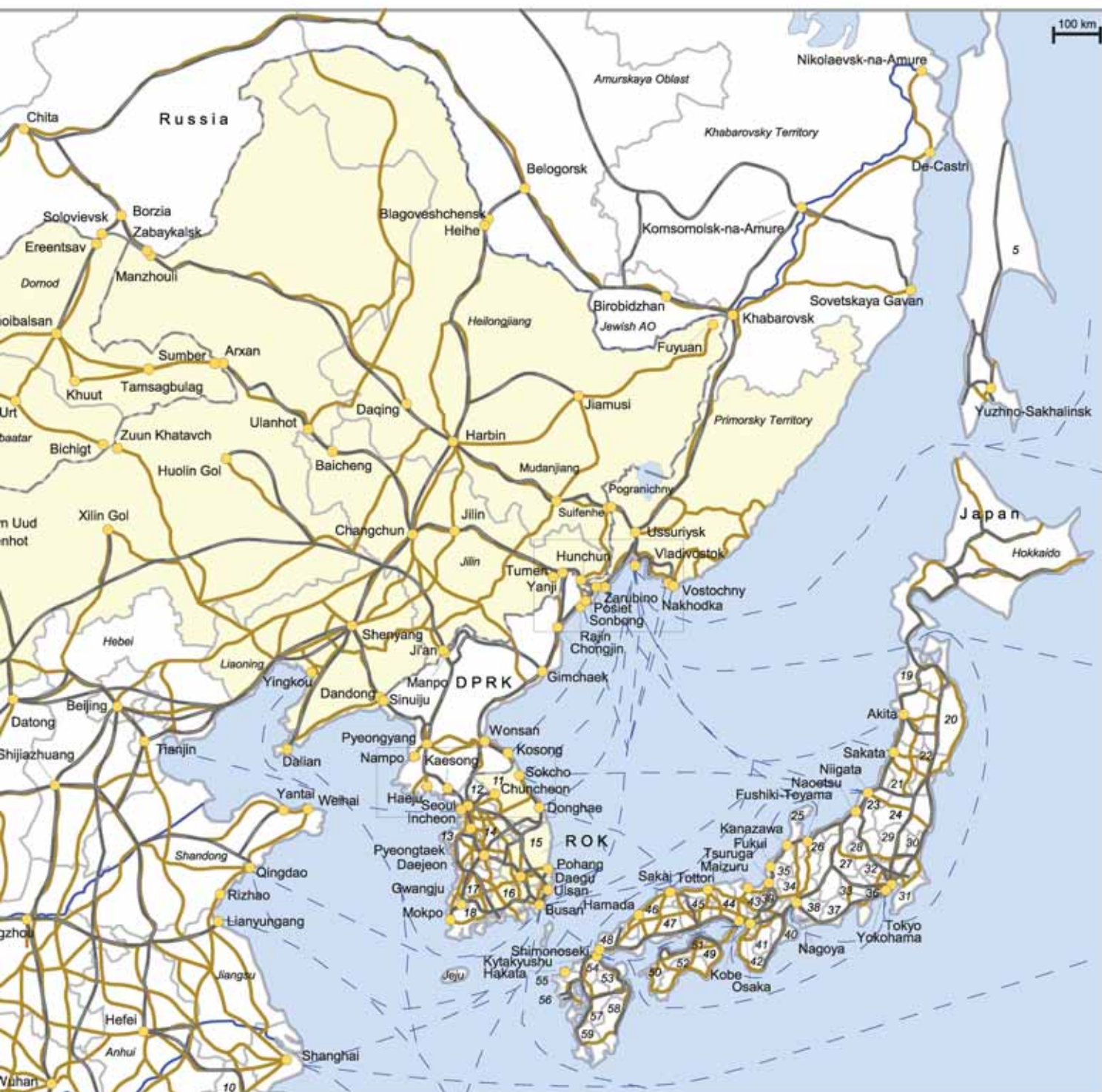


INTEGRATED TRANSPORT INFRASTRUCTURE AND CROSS-BORDER FACILITATION STUDY FOR THE TRANS-GTR TRANSPORT CORRIDORS

Regional Summary Report



**INTEGRATED TRANSPORT INFRASTRUCTURE AND
CROSS-BORDER FACILITATION STUDY FOR THE
TRANS-GTR TRANSPORT CORRIDORS**

REGIONAL SUMMARY REPORT

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Regional Summary Report is prepared as part of GTI "Integrated Transport Infrastructure and Cross-Border Facilitation Study for the Trans-GTR Transport Corridors" by Dr Jean François Gautrin.

The Study has been carried out to assess general situation, bottlenecks and traffic potential of the transportation corridors in Northeast Asia and in the Greater Tumen Region in 2012 in accordance with the decisions GTI Consultative Commission and GTI Transport Board (2010-2011). The set of Study reports consists of five individual country reports: China, Mongolia, ROK, Russia and Japan; and Regional Summary report. The Study results and conclusions served as basis for development of joint agenda in transport cooperation by GTI.

Current version contains minor editing, made in March 2014.

FOREWORD

Northeast Asia is the vibrant and rapidly developing region of the world where technologically advanced economies neighbours manufacturing giant and abundant mineral resources. Such neighbourhood boosted by intense trade ties with Europe, North America and Asia Pacific are source for significant trade flows going through NEA ports along the regions rail and road network.

In 2011, China became number one exporter in the world and was second in total trade volume. With Japan being the forth and ROK the seventh, the country provides countless opportunities for freight forwarding and logistic industries.

Development of coal, iron ore and other minerals sites in Mongolia presents another source of freight with size so significant that urge Mongolian government and business to expend railway capacity in the country. Growing Russian minerals export increases loads in its transportation system.

Potential of the demand for transportation and logistics services is remarkable and give chance for further expansion for ports over the region. Ports, railways and roads of Greater Tumen Region as heart of Northeast Asia are facing the historical opportunity. Some experts estimate the volume of traffic that might be possible to achieve if no constraints exist at only one Pacific port of Tumen Region, Zarubino (Primorsky Territory of Russia), in 30 to 40 million ton per year¹.

How much this potential will be realised depends solely on the efforts in creating proper physical and policy infrastructure along the transport routes that might accommodate these increased trade volumes. If the current situation with capacity of Greater Tumen Region's border-crossing post, ports facilities, railway construction, custom and border crossing procedures is maintained, the opportunities will be missed.

GTI members fully recognise both opportunities and challenges that the region is facing. The Study presents one of the possible scenarios of capturing the potential with certain level of efforts. The reality will fully depend on the governments actions to improve infrastructure and facilitate transit traffic. It is possible both to go beyond the forecast presented in this Report by doing more as well fell much lower than projected by leaving the completely situation as is.



Choi Hoon
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GTI Secretariat

¹ Survey on Zarubino Port Cargo Turnover Outlook: Summary Report. GTI, 2010

CONTRIBUTORS

The present Regional Summary Report has been prepared within the framework of the Integrated Transport Infrastructure and Cross-Border Facilitation Study for the Trans-GTR Transport Corridors for Greater Tumen Initiative by Dr Jean François GAUTRIN. Report is based on the five Individual Country reports prepared by the team of the Mr. Hirofumi ARAI, National Consultant, Japan, Ms Meizhen GAO National Consultant, China, Dr Gotov DUGERJAV National Consultant, Mongolia, Dr Mikhail KHOLOSHA National Consultant, Russia and Dr Hee-Seung NA National Consultant, ROK. Team work was coordinated by Dr Varvara KRECHETOVA, Programme Officer, GTI Secretariat.

Northeast Asia Trade Matrix is the product of joint work of all team members, text in the sections “Northeast Asia Trade and Transport Flows”, “Objectives and Scope of the Study” and maps were prepared by Dr Varvara KRECHETOVA, Programme Officer, GTI Secretariat. Section “Study Results and Outputs” drafted by Dr Gautrin was complemented by the GTI Secretariat.

Overall editing of the text was carried out by Mr. CHOI Hoon, director, GTI Secretariat.

List of Abbreviations

ADB	– Asian Development Bank
AH	– Asian Highway
ASEAN	– Association of South East Asian Nations
BCP	– Border Cross Point
BIMP-EAGA	– Brunei, Indonesia, Malaysia, Philippines East ASEAN Growth Area
BLPA	– Bangladesh Land Port Authority
CAREC	– Central Asia Regional Economic Cooperation
CBTA	– Cross Border Transport Agreement
CPMM	– Corridor Performance Monitoring Measure
DD	– Detailed Design
DPRK	– Democratic People’s Republic of Korea
ECMT	– European Conference of Minister of Transport
EU	– European Union
EWEC	– East-West Economic Corridor
FEFD	– Far Eastern Federal District
FGT	– Free Gauge Train
FS	– Feasibility Study
GDP	– Gross Domestic Product
GMS	– Greater Mekong Subregion
GTI	– Greater Tumen Initiative
GTR	– Greater Tumen Region
ICD	– Inland Container Depot
IMAR	– Inner Mongolia Autonomous Region
IMT-GT	– Indonesia, Malaysia, Thailand Growth Triangle
ITC	– international transport corridor
km	– kilometre
KRW	– Korean Wong
LNG	– liquefied natural gas
MCLI	– Maputo Corridor Logistics Initiative
MDL	– Military Demarcation Line
MM	– ministerial meeting
MOU	– Memorandum of Understanding
NAFTA	– North American Free Trade Area
NEA	– Northeast Asia
NJC	– National Joint Committee
NSW	– National Single Window

NTFC	– National Transport Facilitation Committee
PCU	– Passenger Car Unit
PPP	– Public Private Partnership
PRC	– People’s Republic of China
RCG	– Regional Cooperation Grouping
RMB	– Renminbi
ROK	– Republic of Korea
SCO	– Shanghai Cooperation Organization
SLB	– Siberian Land Bridge
SOM	– Senior Official Meeting
SW	– Single Window
TAR	– Trans-Asian Railway Network
TCD	– Time/Cost Distance
TCR	– Trans-China Railway
TEU	– Twenty-foot Equivalent Unit
TKR	– Trans-Korean Railway
TMGR	– Trans-Mongolia Railway
TMR	– Trans-Manchuria Railway
TSR	– Trans-Siberian Railway
TTFS	– Transport & Trade Facilitation Strategy
UNDP	– United Nations Development Programme
UNESCAP	– United Nations Economic and Social Commission for Asia and the Pacific
USD	– US Dollar
VOC	– vehicle operation cost
WCO	– World Customs Organization
WGAAE	– working group on agriculture, agro-based industry, and environment
WGC	– Working Group Committee

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Legend of the common elements of the figures:

	trans-GTR corridors
	other corridors in NEA
	railways
	roads
	sea lines
	seas, lakes
	rivers
	state borders
	demarcation military line
	provincial borders
	provinces within the Greater Tumen Region
	other provinces
	other transport nodes
Hunchun	names of transport nodes
Gangwon	provincial names
Mongolia	country names

I. INTRODUCTION

I.1. OBJECTIVES AND SCOPE OF THE STUDY

Background

Greater Tumen Initiative (GTI) is the intergovernmental cooperation platform, evolved from Tumen River Area Development Programme (TRADP), supported by UNDP and launched in 1991 with participation of China, DPRK, Russia, Mongolia and ROK. Currently, with the membership of four countries, China, Russia, Mongolia and ROK, the organization promotes joint efforts to support economic cooperation and development in the Greater Tumen Region (GTR)² with one of the objective being to promote the rehabilitation and construction of basic transportation infrastructure and major transportation hubs³.

To enhance cooperation in transport promotion and facilitation, GTI member governments created GTI Transport Board (10th GTI Consultative Commission meeting, 2009). GTI Transport Board started its work with laying foundation for future cooperation activities by adopting GTI Transport Cooperation Program 2012-2013 and launching a Study to identify necessary steps to development of fully operational transportation corridors in GTR.

The study, Integrated Transport Infrastructure and Cross Border Facilitation Study for the Trans GTR Transport Corridors, builds up on the concept of Northeast Asia transportation corridors (NATC), developed by NEA Conference Organizing Committee with participation of Tumen Secretariat and supported by Economic Research Institute for NEA (ERINA), Japan⁴. It considers six of nine NATC; for 2 of them (Tumen Corridor and Korean Peninsula East Corridor) the Study team made small adjustments in the course of analysis.

Study Results and Outputs

To realize the study, the Tumen Secretariat has assembled a team of National Consultants from the GTI member countries and Japan supplemented by one International Consultant. Separate *Individual Country Reports* have been prepared as stand-alone documents. The present document, referred as the *Regional Summary Report* is an adapted summary of the Individual Country Reports presenting an integrated transport vision of GTR.

The overall objective of the study is the design of a Regional Strategy and Action Plans for an *integrated transport network of the GTR with functional infrastructure and easy cross-border movements*. At the respective national levels, measures and investments are being planned and implemented. The purpose of the Strategy in the study is to go beyond and ensure that **regionally there is a functioning transport network accommodating exports, imports and above all transit of goods and passengers**. Designing such a strategy has, however, required collecting and analysing vast amount on information on current and forecasted traffic as well as understanding the performance and constraints along the corridors. This “due diligence study” represented a considerable effort realized by the respective national consultants and constitutes in itself unique and very valuable information which had not been attempted before. An important feature of the proposed Strategy and Actions Plans is a list of infrastructure investments and policy recommendations which are deemed to be required for the establishment of the regional integrated transport network.

Present Regional Summary Report which harmonizes and builds up on the views and results presented by National Consultant in Individual Country Reports, however, is not equal to the simple sum of the Individual Country Reports contents.

First, it differs in the most ambitious part of the Study: forecast freight and passenger flows through the main border crossing points along the trans-GTR corridors. For the Regional Summary report, the forecast

² Greater Tumen Region covers the three Northeast provinces (Jilin, Heilongjiang, & Liaoning) and Inner Mongolia autonomous region of China; the Eastern Provinces (Dornod, Khentii, Sukhbaatar) of Mongolia; the Eastern port cities of the Republic of Korea and the Primorsky Territory of the Russian Federation.

³ Transport related strategic objectives of GTI are (GTI Strategic Action Plan 2012-2015):

- Enhance transport and logistics physical infrastructure in the GTR;
- Simplify the cross-border transportation procedures and reduce non-physical obstacles;
- Develop efficient, safe and sustainable transport and logistics services in the GTR; and
- Enhance smooth and seamless cross-border and transit movement of passengers and freight.

⁴ Vision for the Northeast Asia Transportation Corridors. Northeast Asia Economic Conference Organizing Committee, Transportation Subcommittee. ERINA booklet. 2002. Available at <http://www.erina.or.jp/en/Research/db/pdf2001/01010e.pdf>

is the result of the selected forecast method along with analysis of Individual Country Report and harmonization of figures on bilateral basis. Due to differences in data availability, Individual country reports' forecasts for same territories present a range of figures. Harmonized final figures reflect the opinions International Consultant.

Second, the projects, reflected in the Investment Programme and Action Plan in the report, are those of regional importance. However domestic traffic congestions influence the corridors operations, the Individual country reports suggest more projects that might be considered by the government of the country that each consultant belongs to. Estimated costs for the selected projects represent "rough orders of magnitude" and will have to be refined further while each individual project being in the preparation process.

Scope of the Study

As mentioned before, six transport corridors⁵ have been analysed. However not all corridors have received the same attention. Corridors 1 and 2, the "Tumen Corridor" and the "Suifenhe Corridor" are priority corridors and have been the subject of greater analysis. The development of Corridor 3 (Siberian Land Bridge or Trans-Siberian railway) remains entirely a Russian decision even if the corridor provides transit possibilities for Japanese and ROK cargos destined to Europe bringing also mining resources to these two countries. Corridor 4 is a very important transport corridor for Northeast China. Prospects for regional transit, however, remain limited.

The Democratic People's Republic of Korea (DPRK) is no longer a member of GTI after withdrawal in 2009. Therefore corridors 5 and 6 originating from the Republic of Korea (ROK) cannot reach the rest of GTI countries (except by air and sea). This poses a serious limitation to the study. However it was decided to consider in an optimistic scenario further liberalization and opening of DPRK with re-establishment of connections with ROK and proper functioning of the Korean Peninsula corridors. In addition, whether under a "status quo" or "optimistic" scenario, ensuring good connectivity between DPRK and Russian Federation was part of the strategy for an integrated GTR transport network.

Japan is also not a member of GTI and needed to be treated differently. The issues was nevertheless simple and consisted to ensure that the future GTI transport strategy develop efficient sea corridors between ports on the Western coast of Japan with Korean peninsula ports and Russian Federation ports.

After presentation of an economic outlook, the study proceeds with a due diligence review of the corridors before outlining their prospects. The study concludes with a Road Map and Action Plans comprising investment schedule and policy directions.

1.2. NORTHEAST ASIA TRADE AND TRANSPORT OUTLOOK

GTI member nations and Japan are important players in the world trade: in 2010, together they generated 21% of World's export value, 18% of import⁶. Intraregional trade (GTI member countries and Japan between each other) was 13% of total trade of these countries or about 7% of the world trade⁷. In 2010-2011, China, Japan and ROK were within top ten world's exporters and importers⁸.

Except for the year 2009, marked with significant drop in export and import values around the globe, over last decade NEA countries showed stable growth in both, with China being the leader. In 2002-2011, Chinese exports grew at rates over 20% a year, imports – over 15%. Although, the growth rates for other NEA countries within the period lower, overall positive trend in trade gives bright outlook for development potential of trans-GTR corridors.

The bilateral flows in NEA on a country level are summarized below in Overall Trade Matrix 2010. Due to the lack of regional data within the countries, constructing the similar matrix for the provinces within the

⁵ The transport corridors are:

- Corridor 1: Tumen Transport Corridor: ports in the Tumen River area (Zarubino/Posiet/Rajin) – Tumen/Hunchun – Changchun – Arxan – East Mongolia – Trans-Mongolia Railway or Siberian Land Bridge.
- Corridor 2: Suifenhe Transport Corridor: ports in the Primorsky Territory (Vostochny, Nakhodka, Vladivostok) – Grodekovo – Suifenhe – Harbin – Manzhouli – Zabaykalsk – Siberian Land Bridge.
- Corridor 3: Siberian Land Bridge
- Corridor 4: Dalian Transport Corridor: Dalian – Shenyang – Harbin – Heihe – Blagoveshchensk – Siberian Land Bridge.
- Corridor 5: Korean Peninsula West Corridor: Busan – Seoul – Pyongyang – Sinuiju – Shenyang – Harbin.
- Corridor 6: Korean Peninsula East Corridor: Busan – Rason – Tumangang – Khasan – Siberian Land Bridge.

⁶ Calculated from WTO International Trade Statistics 2011,

www.wto.org/english/res_e/statistics_e/its2011_e/its11_world_trade_dev_e.htm; Individual Country Report Mongolia.

⁷ Table 1.

⁸ WTO, http://www.wto.org/english/res_e/statistics_e/its2012_e/its12_world_trade_dev_e.htm.

Greater Tumen Region was not possible under present research capacity. Therefore the matrix shows trade flows between China, Mongolia, ROK, Russia, Japan and beyond for counties as whole.

Table 1: NEA Overall Trade Matrix (USD million), 2010

Destinations Origins	Mongolia	PRC	Russia	ROK	Japan	Asia Pacific	Rest of the world	TOTAL
Mongolia		2,502	81	35	18	2,538	368	5,541
PRC	1,210		34,314	70,170	136,923	573,712	783,171	1,599,499
Russia	992	23,124		10,162	14,460	28,222	323,892	400,851
ROK	187	127,593	7,515		28,351	166,694	147,179	477,520
Japan	178	162,904	9,146	63,250		365,415	182,969	783,862
Asia Pacific	1,323	583,337	20,632	132,837	265,015		n.a	1,003,145
Rest of the world	1,680	469,349	151,795	146,567	229,790	n.a		999,181
TOTAL	5,570	1,368,809	223,483	423,020	674,556	1,136,580	1,437,579	

Note: Origins are in column, destinations in row, each cell shows bilateral flow from origin to destination (for ex. second cell in "Mongolia" headed row shows Mongolia export to PRC (USD 2,502 million); first cell in "PRC" headed row shows Chinese exports to Mongolia). Row "TOTAL" shows total import of destinations; column "TOTAL" shows total export of origins.

Source: Individual Country Reports

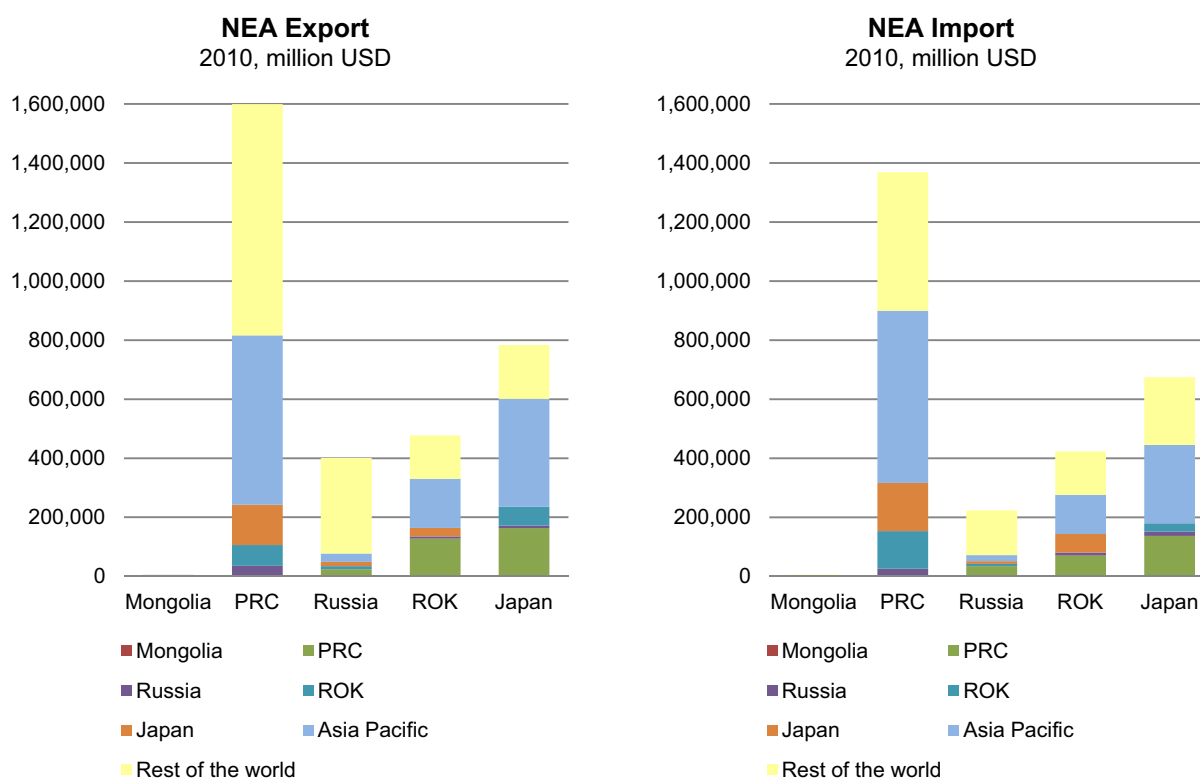


Figure 2: Northeast Asia trade

For the three Northeast China provinces (Jilin, Liaoning, Heilongjiang), trade with the ROK, Russia and Japan account for 25 to 35% of their respective total trade. But put in perspective with total China trade, the contribution of the three provinces represent 4% of the trade with ROK, 6.5% of the trade with Japan and 17% of the trade with Russia. Japanese west coast prefectures contribute 8% to the total Japan's trade with PRC, 18% with ROK, 11% with Russia. Share of ROK's east coast provinces and cities in bilateral trade with PRC is 20%, with Russia 30%. In Russia, provinces along trans-GTR corridors (Primorsky Territory, Zabaykalsky Territory and Amursky oblast) contribute 8% to trade with PRC, 6% with ROK⁹.

China, Japan and ROK are within world top ten countries by container port throughput, and Russia is 33rd¹⁰. In 2010, Chinese ports handled 24% of world containers, Japan 4%, ROK 3%. Main world container

⁹ Individual country reports and Corridor Study Team.

¹⁰ UNCTAD, 2010

ports are located within GTR (Busan, Dalian, Yingkou) or borders with the region (Qingdao, Tianjin, Tokyo, Kobe, Nagoya).

It implies that GTR locates at the core of the cross-roads of trade flows in NEA and between NEA and Asia Pacific countries and beyond that makes trans-GTR ports and transport routes potentially beneficial corridors for regional trade.

1.3. ECONOMIC OUTLOOK OF GREATER TUMEN REGION

Improving connectivity in the region and putting in place functioning transport corridors is fully justified with the positive economic outlook envisaged for the whole Greater Tumen Region including connections with the Korean Peninsula and East Coast of Japan.

Northeast China, with the provinces of Liaoning, Jilin and Heilongjiang and the Inner Mongolia Autonomous Region (IMAR with only eastern part being relevant) constitutes the geographical core of GTR and therefore its economic outlook deserved to be reviewed first.

Northeast China is a vast area of 2 million km² and 134 million of population accounting respectively for 21% of China and 10% of the population. The region has always been the industrialised heartland of China specializing in heavy industry production with a GDP reaching close to RMB 5 trillion (USD 775 billion) in 2010 or 12% of total China. Prospects for Northeast China remain very positive. In the last decade the region's growth rate has systematically outpaced the national average by more than 3% with annual growth rate in the 14%. Amid the predicted long term slowdown in the GDP growth at the national level, the region is expected to grow with the average 10% for the period up to 2020.

Economic growth however varies among the 4 provinces of Northeast China. Inner Mongolia has abundance of resources and is known to house more than a quarter of the world's coal reserve. Its GDP was RMB 1.2 trillion in 2010 and has shown fast economic growth recently. Liaoning Province is the largest economy with a GDP of RMB 2.2 trillion in 2011,¹¹ having the fastest growth in China and ranking 7th among all provinces. Liaoning is one of the most important raw material production base in China with petroleum and gas extraction and large production of smelting and pressing of ferrous metals. Shenyang, the capital city, and ports of Dalian and Yingkou are the major gateways for Northeast China. Jilin Province recorded GDP RMB 1 trillion in 2011 (27 million of population) and has vast reserves of oil, gas, gold and silver and the country largest oil reserve share, but industries are mostly concentrated on automobile and railway rolling stock production and iron alloy being also the most important commodity grain base in China. Jilin Province is linked to DPRK through the Yanbian Korean Autonomous Prefecture with the capital city of Yanji. The Heilongjiang Province with a population of 38 million and a GDP of RMB 1 trillion is the main gateway to the Russian Federation. In the past, the province was suffering from economic slowdowns due to the distance from major cities and regions in Chinese mainland. But Government has since 2003 put in place programmes which have helped accelerating development on the region. Economic activities are concentrated on coal production, petroleum, machinery, food and wood products.

For the due diligence of the GTI transport corridors what matters is the volume of trade generated by Northeast China. The detailed trade matrices are given in Table 1 but some of the salient features for China are summarized here.

The total trade of Northeast China in 2010 which amounts to USD 127.7 billion¹² represents only 4% of the total China trade. This is not surprising as most of Northeast China production is for the domestic usage and both its exports and imports would also be dealt through ports located in other provinces (Tianjin, Shanghai). At least USD 38 billion or 30% of the region's trade refers to that with ROK, Russian Federation and Japan¹³. For Heilongjiang, dominant trade is with Russia (USD 7.5 billion) and a large part of it will probably move along GTI corridors. Some of the trade of Liaoning would move along Corridor 4 (Dalian) though most likely the areas of production are concentrated in Shenyang, Fushun or Dalian. Of particular interest is to discuss the trade volume between Jilin Province (and IMAR) and the ROK and Japan, which could eventually travel on the Tumen Corridor (Corridor 1). The total trade amounts to USD 4.2 billion (USD 3.5 billion for Jilin and USD 0.7 billion for IMAR). Corridor 1 may not attract all that volume but a potential of USD 1.5 to 2 billion could be envisaged as potential for the Rajin-Zarubino port areas. Northeast China trade growth in the last decade has been in double digits and it is expected that an average 10% annual growth could easily be achieved.

The **Primorsky Territory of the Far Eastern Federal District of the Federal Russian Federation** belonged from the beginning to the Greater Tumen Region. Recently, the Khabarovsk Territory has

¹¹ It was RMB 1.85 trillion in 2010 with a population of 38 million.

¹² Heilongjiang: USD 26 billion, Jilin: USD 12 billion, Liaoning: USD 81 billion, IMAR: USD 8.7 billion (Individual Country Report, PRC).

¹³ Data for Heilongjiang, Jilin, Liaoning; IMAR data are not available in full.

expressed growing interest to participation in GTI activities and in order to make transport connectivity more comprehensive the territory along with Amursky Oblast, the Jewish Autonomous Oblast as well as Zabaykalsky Territory should be considered as provinces along the trans-GTR corridors.

The Far-Eastern Federal District occupies 36% of Russia's territory. It borders China in the south and DPRK in its southernmost point. But its population density is only 1.0 person per km². The regions collectively houses abundant tin, diamond, gold, tungsten and coal deposits in the district and offshore oil and gas exploitations in Sakhalin Island, Yakutia, Kamchatka and Chukotka and vast iron ore resources and coking coal in South Yakutia, Amur Region and the Jewish Autonomous Oblast. The region's total forest area is about 560 million hectares. The Far East's regional GDP amounts to 2,103 billion rubbles (USD 67.3 billion or 4.7% of Russia's GDP) and its GDP per capita is 333,800 rubbles (USD 10,680). Main industrial branches are mining, gold, fishing and forest industry, nonferrous metallurgy and shipbuilding.

The Primorsky Territory occupies 2.7% of the Far Eastern Federal District's territory. It borders China and DPRK. Its population density is 11.9 persons per km². There are coal fields and rich nonferrous metal deposits. Regional GDP amounts to 464 billion rubbles (USD 14.8 billion or 22.1% of Far East's GDP) and GDP per capita is 237,000 rubbles (USD 7,584). The industrial base of the territory is quite diversified comprising: machinery & equipment, shipbuilding and ship repair, aircraft assembly, food and fish industry, wood and timber industry, tourism and transport and logistics with the large presence of the Russian Navy.

In the last decade, the Russian economy has been growing in nominal at an annual average rate of 20% with the growth being more rapid in the Far Eastern Federal District (FEFD), 21% and the Primorsky Territory (22%). However the large part of benefits of such growth has been reportedly tampered by chronic inflationary pressures. The overall national outlook sounds good as Russia has pulled out from the 2008-2009 recession with growth rates of 4% since 2010. Growth continues to be driven by energy exports. And this has augured well for the FEFD's economy.

In fact, largely due to the energy exports the Russian Far East is getting more integrated with Northeast Asia economies. Up to 75% of the total trade of FEFD is with these countries: Japan 28%, China 27% and ROK 18%. Energy and mining exports of FEFD in a proportion of 70 to 90% solely destined to the three countries¹⁴. Major shifts are also occurring in the transportation of energy related products. They used to be largely transported by rail but things are changing with the construction of a few major pipelines. The East Siberian-Pacific Ocean (ESPO) oil pipeline is expected to be completed in 2012. The pipeline originates from Taishet in East Siberia and ends at the oil terminal of Kozmino on the East Sea/Sea of Japan near Nakhodka Port. From Skovorodino, there is a spur line (1,056 km) going to Daqing in China operating since January 2011. Now half of the Russian oil supply comes through the pipeline. The ESPO runs for 4,860 km and would at the beginning deliver 600,000 barrels per day increasing to 1,600,000 barrels/day in 2025. For gas, in addition to the expansion of the Sakhalin LNG terminals, there are plans to construct two gas pipelines: Yakutia – Khabarovsk- Vladivostok and Sakhalin-Khabarovsk-Vladivostok. The prospect of energy and mining exports is therefore quite bright for the Russian Far East in general and for Primorsky Territory in particular. Such prospect should contribute to the reversal of the current trend of outmigration: from 1989 to 2010 Russian Federation population decreased by 3%, FEFD by 21% and Primorsky Territory by 13%.

Trade is of relative importance for Primorsky Territory, amounting to USD 6.6 billion (2010) but it is far less important for other Russian territories in GTR, with trade for Amursky and Zabaykalsky Territory being respectively USD 438 and USD 503 million per year.

The economy of **Mongolia** did return to solid growth in 2011 following a severe contraction in 2009. Growth for 2011 has reached 17.3%, up from 6.4 % in 2010, and is being spurred by the development of large copper, coal and gold mining projects. High GDP forecasts are based on (i) continued strong flows of foreign direct investment, which has more than doubled between 2010 and 2011; (ii) continued rapid expansion of the mining sector, especially coal; (iii) public investment being raised by a factor three; and (iv) strong consumer demand due to some fiscal measures to boost domestic spending. Economic prospects for the medium to long term horizon are very upbeat and only the risk of accelerated inflation may tamper the prevailing optimistic outlook.

The trade deficit has climbed to record levels in recent months as imports have surged. Exports are growing strongly too, up 176% compared to the previous year supported almost entirely by large coal shipments to China from coal mines in Southern Mongolia. Constituting 44 % of the value of total exports, coal exports increased by 178 % over the previous year.

¹⁴ With 2/3 of coal export going to Japan and the rest to ROK, almost whole crude oil export to Japan, refined oil products export to China and ferrous metals exports to China and ROK (Elena Saprykina "The Russian Far East and Asia Pacific Countries: Opportunities and Prospects of the Economic Integration", Far Eastern National University, 2009) .

The coal sector has become the fastest growing sector, surpassing copper exports in becoming the top export earner for the country. The PRC, the largest thermal coal consumer in the world, remains the only destination for coal from Mongolia. It is expected to grow even faster in the near future when large coal mining projects start production. Coal deposits are scattered all over the country and coal in the past was mostly used in thermal power facilities before becoming a major export commodity. However, it is in the south that the major developments are taking place. The Government-controlled Tavan Tolgoi mine is situated in South Gobi desert 98 km east of Dalandzadgad. It has been in operation since 1967 and has estimated reserves of 1.9 billion tons of coking coal from a total of 4.5 billion tons of reserves and could produce as much as 20 million tons per year. The mine is situated 400 km from the nearest railway, which poses a logistical problem. The government, however, plans to build firstly a railway connection from Tavan Tolgoi to Sainshand on the Mongolian Railway line. Then a line will be built from Sainshand to Khuut and Choibalsan with the objective to then connect to China and Russia as the coal is for export.

The situation is however different on the three provinces (aimags) in Eastern Mongolia which form part of GTR where for instance all coal production is for domestic use only. The most eastern province is Dornod, with Choibalsan as capital and a total population of 73,600. Choibalsan has a population of 38,000 and is located 661 km from Ulaanbaatar and 450 km to Chinese border. Choibalsan is located on the Trans-Manchurian Railway leading to Russia at Borzya. The other two provinces are Sukhbaatar and Khentii with respective population of 55,000 and 71,000. In fact Eastern Mongolia accounts for little in the Mongolian economy, being only 18% of the total area, 7% of the total population and a meagre 3% of the total GDP. Its importance in GTR is because it could be a major transit route to Northeast China and the rest of the Northeast Asian countries for mining resources and coal in particular.

Republic of Korea (ROK) over the past four decades has demonstrated incredible growth and global integration to become a high-tech industrialized economy. In 2011, ROK joined the trillion dollar club of world economies, and currently is among the world's 9 largest economies. With the recent global economic downturn in late 2008, ROK GDP growth slowed to 0.3% in 2009. In the third quarter of 2009, the economy began to recover, in large part due to export growth with GDP reaching 3.6% in 2011. The GDP (at purchasing parity power) was USD 1.574 trillion in 2011 with GDP per capita being USD 32,100. ROK's population has now reached 48.5 million with the country being the third most densely populated in the world. The population of Seoul Metropolitan area (Seoul, Incheon and Gyeonggi) reached to 23.8 million close to half of its total population.

The exports in 2011 have increased by 19.3% compared to the previous year, recording USD 556.5 billion, and imports have increased by 23.3%, recording USD 524.4 billion. The trade surplus reached USD 32.1 billion. Among the exports, major items such as shipbuilding, petroleum products, and car production showed high growth rates despite the slowdown in USA and European markets. A new high record has been set in exports to China (USD 134.2 billion, 24% of total). Exports to main trading partners such as Japan (7%), Southeast Asia (29.8%), and the United States (12.8%) have significantly increased as well. Imports of crude oil, gas, and coal have rapidly increased by 23.3% accordingly. In Northeast Asia, China and Japan remain main importing countries.

Table 2: ROK Foreign Trade (USD million)

Country	Import	Export	Balance
China	86,425	134,205	47,779
Japan	68,302	39,713	-28,589
Russia	10,855	10,306	-549
Mongolia	61	350	289
DPRK	914	800	-114

Source: The Korea International Trade Association

ROK is currently the 2nd most important trade partner of DPRK. The trade volume between ROK and DPRK has increased about 15% each year from 1991 to 2012 on an annual average. In 2011, the total trade volume between ROK and DPRK reached 1,7 million USD being constant since 2007. In particular, inter-Korean trade and economic cooperation is considered to show signs of stability not affected by political or military tensions.

Since **1990's Japan** has suffered deflation and low economic growth. Average nominal GDP growth rate from 2000 to 2010, so called the lost decade, is negative (-0.4%) and real growth rate during the same period is merely 0.9%. In terms of absolute volume of nominal GDP Japan was surpassed by People's Republic of China in 2010 and made Japan become the third largest economy in the world.

In 2011, total exports were USD 819 billion with USD 851 billion of imports. Trade with China was USD 344 billion (USD 161 and USD 183 billion respectively of exports and imports). Balance with ROK was clearly positive with USD 66 billion of exports and USD 40 billion of imports but negative with Russia (USD 12 billion of exports against USD 19 billion of imports). Trade with Northeast Asia countries increased dramatically from year 2000 to 2007 and has so far remained stable since¹⁵.

What matters in the case of Japan is the current estimate and prospects of the flow of traffic to GTR ports from Japanese west coast ports. This question is reviewed in sections below.

II. DUE DILIGENCE REPORT OF GTR's CORRIDORS

The intention of the "Due Diligence Report" is to review the performance of the six GTR's Corridors with greater emphasis on Corridor 1, 2 and 4. This means assessing the land connectivity of the transport corridors in the Greater Tumen Region including reviewing the quality of support provided by the GTR ports. Though the corridors are land routes, the due diligence report goes beyond and includes also a review of the sea connections to the Korean Peninsula and the West Coast of Japan.

A corridor is said to be performing when traffic is increasing and if the supporting physical infrastructures and "soft infrastructures and regulations" are adequate and do not create severe constraints.

The original intention of promoting GTR transport corridors is because this will contribute to greater regional integration. The idea is that corridors should be more than just routes to bilateral trade or domestic trade but should become effective interregional routes with easy passage of transit traffic.

After a traffic review along the corridors, constraints and limitations are highlighted.

II.1. TRAFFIC REVIEW ALONG THE CORRIDORS

Corridor 1: Tumen Corridor

Corridor 1 connects East Mongolia with Northeast China reaching the sea at the port of Zarubino in Primorsky Territory.

In Eastern Mongolia, the road corridor travels first from Ulaanbaatar on AH 32 to Baganuur and Undurkhaan. This is referred as the East-West Corridor and is a 331 km paved road. From Undurkhaan, East-West Mongolian corridor splits into two gravel roads, one going to Choibalsan, the capital of Dornod Province (324 km) and the other one going to Baruun Urt, the capital of Sukhbaatar Province (229 km). From Choibalsan, AH 32 travels to Tamsagbulag, Sumer up to the border crossing with China at Nomrog. A bridge has recently been built at Nomrog but the road BCP does not yet officially function. Scattered population and limited economic opportunities suggest that road traffic at the BCP will be minimal. The functioning road BCP with China is at Bichigt which is not directly on Corridor 1 and AH 32 but more on a road from Baruun Urt to the Chinese border. Traffic at that BCP is reported to be approximately 50 vehicles a day, almost exclusively trucks.

But it is the rail connection which presents the real interest in Eastern Mongolia as a major component of the Tumen Corridor. This railway connection justified by the transportation of high volumes of coal is still at the planning stage. The railway line will be built from Choibalsan to Nomrog to connect at Arxan with the Chinese railway system. Discussion on movements of coal through that possible routing is discussed in the next chapter.

In Northeast China, the Tumen Corridor passes through Inner Mongolia and the Jilin Province before reaching the Russian Primorsky Territory. The corridor is both a road and railway route. The road corridor goes along AH 32 starting at Arxan, in the North, bordering Eastern Mongolia, on S203 to Ulanhot (290 km), continuing to Changchun on G302 (427 km) and then to Yanji also on G302 before reaching Hunchun and the border of Primorsky Territory on G12 (567 and 423 km). Therefore the total road length of the Tumen Corridor in Northeast China is 1,707 km. The road connecting to Mongolia, the Ulanhot-Arxan is a Provincial Road of lower technical with no record of daily traffic. The expressway part of the Tumen route between Changchun and Hunchun has a daily traffic¹⁶ of 11,196 elsewhere on national roads, daily traffic varies between 4,780 and 6,593. However traffic at the Kraskino BCP is only on average 52 vehicles per day (130 PCU/day), accounting for 93,000 tons per year and approximately 600 passengers per day. Most

¹⁵ During that period trade with China increased at annual growth rates of 20% for exports and 14% for imports; with ROK it was respectively 10% and 5% but trade with Russia was even on a more accelerated course with increase of 20 times for exports and 15% for imports.

¹⁶ Daily traffic figures are here given in PCU/day.



Figure 3: Rail and road networks of Northeast Asia.

of the freight traffic is in exports but it is important to note that there was in 2010 17,000 tons of transit. This transit comes from containers unloaded at Zarubino port.

Railway network includes sections of Hunchun-Jilin, Jilin-Changchun and Changchun-Songyuan-Ulanhot-Yiersi (Arxan) for a total of 1,267 km. The railway line is presently a single track non-electrified but there is a plan to build a rapid passenger dedicated rail line between Changchun-Jilin-Hunchun.

No specific records were made available on the volume of freight and passengers transported along the corridor in Northeast China. Provincial statistics for the Jilin Province gives a total of 74 million tons and 182 million tons¹⁷ respectively transported by the railway and road network. This suggests a figure of 40 to 50 million tons on the rail corridor and perhaps 60 million tons on the road corridor.

In Primorsky Territory, Tumen Corridor is both a rail and road corridor. The road from the Chinese border to the first town, Kraskino in Primorsky Territory, is a 30 km paved highway. The road then goes to Slavyanka (55 km) but before reach the town, there are intersections and road going to Posiet Port (8.3 km from intersection) and Zarubino Port (12.6 km). The length of road from the Chinese border to Zarubino Port is 71 km and 42 km for Posiet Port. Zarubino is 170 km from Vladivostok. The average daily traffic on the ITC Primorye 2 (Tumen Corridor) is approximated as 2 to 3,000 vehicles per day (road from Vladivostok leading to Zarubino, Posiet Port and border with DPRK).

In 1994, a new railway connection was built connecting Kamyshovaya to Hunchun in Jilin Province with the objective to connect Zarubino Port and Posiet Port with Northeast China. The railway was operating from year 2000 to year 2004 with little load and was facing serious management problems. The line is currently not operating. However Zarubino Port and Posiet Port are connected to the Russian Federation Railway network and the Trans-Siberian through the 237 km of Khasan (border with DPRK) – Baranovsky line. The rail line has a capacity of 10 million tons/year but the average load is more in the order of 5 million tons.

At the end of the Tumen Corridor are the ports of Zarubino and Posiet. Posiet is a dedicated coal port for export. In 2010 the port was handling 3.5 million of coal coke which was supplied from Siberia by rail. Throughput has been increasing at 20% per year and reached 4 million in 2011. Zarubino Port is currently owned and managed by a joint holding of Russian and Chinese interest. In 2010, the port was handling 128,000 tons including 2,178 TEUs in transit to Northeast China. The maximum throughput was in 2008 with 252,000 tons with 6,840 TEUs. The port was intended to serve the transit traffic but it is presently serving both the foreign and domestic traffic¹⁸. The traffic at Zarubino Port comprised machinery and equipment, metal scrap, imported cars and general goods in containers and currently no passengers.

Corridor 2: Suifenhe Corridor

The Suifenhe Transport Corridor runs from Vladivostok, Nakhodka and Vostochny ports in the Russian Far East, through the Chinese border city of Suifenhe to Harbin, and then stretches from Manzhouli to Zabaykalsk in Russia, before linking up with the TSR at Chita. The corridor provides Heilongjiang Province with access to the sea using Russian ports and it is currently the main trade route between China and Russia. The corridor length is 1,500 km.

In Eastern Mongolia there is a corridor from Choibalsan or Khuut leading to the Russian Federation at Solovievsk and reaching the TSR at Karymskaya. This corridor could be considered as an appendix to Suifenhe Corridor or part of the Tumen Corridor. There is a broad gauge rail connection between Choibalsan and the Russian border at Ereentsav (Solovievsk on Russian side) on 238 km. The rail line then continues to Borzya where it will join the Trans Manchurian Railway (85 km) reaching after the Trans-Siberian Railway at Karymskaya, 216 km after. Also the distance from Borzya to Zabaykalsk is 150 km. At Solovievsk BCP rail traffic has continuously been decreasing and represents only 37,000 tons, mostly exports from Russia¹⁹. There was also a trickle of rail passengers crossing the border by train (800 per year).

There is an unpaved road (not an Asian Highway) connecting Choibalsan to Ereentsav (BCP). Traffic along the highway is low, being hardly above 150 to 200 vehicles a day. And only approximately 4 cars a day were crossing the border with 10,000 passengers a year. Whether by rail or by road, very little activities were reported at the BCP.

The situation is drastically different at the border crossing between Russia (Zabaykalsky Territory) and Northeast China (Inner Mongolia) named Zabaykalsk on Russian side and Manzhouli on Chinese side. There is 10 km between the two BCPs under a dual gauge system. Manzhouli is said to be the busiest BCP in the whole of China for road and rail traffic accounting in volume for 60% of the total Sino-Russian trade.

¹⁷ For year 2009 (Jilin Statistical Yearbook)

¹⁸ In 2010, there was 40,000 tonnes of exports, 34,000 of imports, 37,000 of domestic traffic and 17,000 of transit.

¹⁹ In 2010, there was 28,000 tonnes of Russian exports and 9,000 tonnes of imports;

Rail traffic in 2011 was 26 million tons with 16.1 million of import from Russia, 2.1 million of exports and 7.7 million of transit. Traffic is however highly volatile as exports increasing from 2010 at 62% and imports decreasing by 20%. In addition there was 660 million tons largely in the form of exports from China. The total number of passengers crossing the border has been constant over the years, being 1.4 million.

Imported goods to Manzhouli Port are wood products (34%), pulp, fertilizer, crude oil, refined oil, primary plastics, steel scrap and steel, while the major exported goods are textiles, steel, automobiles, mechanical equipment, mechanical and electrical products, fruits and vegetables.

The road corridor in Northeast China is 1,500 km extending from Manzhouli to Suifenhe (BCP with Primorsky Territory) along AH 6 which translates into the following Chinese road classification: G301 from Manzhouli to Daqing (620 km), G 10 – Expressway from Daqing to Mudanjiang through Harbin (432 km, and 549 km by G 301), Mudanjiang to Suifenhe back on G 301 (160 km). The average daily traffic (in PCU) on G301 varies between 1,600 and 2,600 but reaches 11,800 on the expressway.

The rail corridor in Northeast China is longer than the road corridor, being 1,500 km. It is double track and electrified on 1,119 km between Mudanjiang-Harbin-Hailar and single track non-electrified elsewhere. The rail corridor is a key route for trade between China and Russia but it is also a major route for domestic transport in the industrial heartland of Heilongjiang. There are two railways in Suifenhe Corridor, namely, Harbin-Suifenhe Railway (Binsui Railway) and Harbin-Manzhouli Railway (Binzhou Railway). The maximum freight density in 2010 on the Harbin-Mudanjiang (Binsui Railway) was 55 million tons reaching 60 million tons on the Harbin-Hailar (Binzhou Railway).

Suifenhe BCP is located in southeast Heilongjiang Province, boarding Primorsky Territory in Russia in the east. There are two roads and a railway connected to Russia. The railway in Suifenhe is linked to Vladivostok in Russia, and connects three important ports in the Primorsky Territory (Vostochny, Nakhodka, Vladivostok). On the Russian side BCPs are Pogranichny rail (Grodekovo station) and road. Suifenhe is also a busy BCP accounting for 7.9 million tons of crossing freight in 2010 largely dominated by flows from Russia (7.1 million tons by rail and 0.1 by road) with Chinese exports being 0.7million tons²⁰ in equal proportion between rail and road. The main items imported are timber, oil, fertilizer, concentrate, powder, pulp, scrap steel and rubber etc. The items exported are mainly clothing, footwear, household appliances, fruits and vegetables, grain, meat, lumber and building decoration materials. In 2010, there was 1 million of passengers passing through the BCPs. Freight and passengers volumes are recovering from the 2009 downturn but are still below the 2007 levels with however Chinese exports by road rising.

From Pogranichny to Primorsky ports, Corridor follows the AH6 which is A184 from Pogranichny to Ussuriysk, M60 from Ussuriysk to Uglovaya and Vladivostok and A189 from Uglovaya to Nakhodka. Grodekovo-Ussuriysk-Nakhodka-Vostochny rail segment is 382 km. It is a single track from BCP to Ussuriysk where it joins the double track Moscow-Vladivostok.

It is estimated that the total freight traffic along the main corridor of Primorsky Territory from Khabarovsk and Vladivostok-Nakhodka-Vostochny is approximately 150 million tons per year. The three ports of Primorsky Territory are deep sea ports, open all year round, and play different roles. Vladivostok historically was the gateway of the Russian Far East with strong navy presence. It is a multipurpose port, handling now 11.5 million tons (5.7 exports, 2.4 imports and 3.4 domestic) and 477,000 TEUs in 2010. Container traffic has been increasing rapidly and was said to reach 600,000 in 2011. Exports and domestic traffic is mostly oil products. Other export products are containerized and non-containerized general cargoes, coal, and timber. Nakhodka with 15.3 million tons in 2010, is mostly an oil and coal export port. In addition there are 130,000 of outgoing non-containerized general cargo transit flows. Throughput at Nakhodka has not been expanding in the last decade. Vostochny, on the other hand has been growing rapidly with a throughput in 2010 of 36 million tons. Again Vostochny is a dedicated export port for oil products and coal (approximately 15 million each) with significant container traffic. There is also volatile transit traffic (in and out) of containers (11,300 TEUs). Vladivostok Port also receives cruise and passenger ships (83,000 in 2010).

Corridor 3: Siberian Land Bridge Corridor

Corridor 3 is not a regional corridor but exclusively a Russian corridor and therefore it will not be analyzed. The only interest for GTR of Corridor 3 is a review of the capacity of the Trans Siberian Railway (TSR) and its capacity to handle transit traffic originating from the Korean Peninsula, Japan and Northeast China. Such a review is covered later.

Corridor 4: Dalian Corridor

The corridor stretches from south to north through Jilin, Liaoning and Heilongjiang Province in China, and Amur in Russia. It runs all the way north from the port of Dalian in Liaoning Province to the Heihe BCP in

²⁰ Russia reports slightly lower figures: 6.9 million of exports and 0.6 million of imports



Figure 4: Annual average daily traffic along the trans-GTR transport corridors, 2010, vehicles/day.

Heilongjiang Province. It then connects through Blagoveshchensk BCP in Russian Federation (Amur Territory) to the Siberian Land Bridge (SLB) or Trans-Siberian Railway as well as with the Moscow-Vladivostok Highway at the city of Belogorsk. The corridor reaches important big cities and ports in China and Russia. It connects provincial capital cities such as Shenyang, Changchun, Harbin and Blagoveshchensk as well as Yingkou Port. The total length in China is around 1,600 km.

There are both railway and road in *Dalian Corridor*. The Dalian-Harbin rail section is double track and electrified, the Harbin-Suihua is double track but not electrified and the Suihua-Heihe is single track not electrified. The corridor is also an Asian Highway (AH 31) and there is a four-lane expressway between Dalian and Harbin (657 km through G15 and G1). The road between Harbin and Heihe is a Grade 2 highway. There is currently no bridge on the Amur River connecting Heihe and Blagoveshchensk though in summer, vehicles cross on a pontoon²¹ and in winter there is an ice bridge.

The city planning and industrial layout in north-eastern provinces of China are based specifically on Harbin-Dalian railway. This constitutes the main trunk corridor of the industrial heartland of the whole of Northeast China. Traffic along that corridor is therefore expected to be extremely dense. Traffic along the Dalian-Harbin expressway varies between 18 and 35,000 vehicles per day (measured in PCU). Data on railway traffic per line was not available but the total railway traffic for the Liaoning Province is reported to be 456 million tons. Freight traffic between 2005 and 2009 has been increasing at annual growth rate of 20%.

Dalian Port and Yingkou Port are both the gateway ports of Northeast China and both located along the corridor. In 2010 Dalian Port throughput was 314 million tons and Yingkou Port 226 million. The two ports handle very large volumes of dry and liquid bulk, break bulk freight and containers²², Dalian handling more crude oil (34 million tons) and Yingkou more coal (33 million tons). The container throughput of the two ports was respectively 5.26 million TEU and 3.34 million TEU. Among these, the Japanese line contributed 900,000 TEU; and the ROK line, 700,000 TEU. Up to 30% of the throughput traffic was foreign trade. The ports have been seeing fast growth in the last decade with container traffic, for example growing at 20% per annum since 2005.

Blagoveshchensk BCP was handling in 2010 178,000 tons with imports from China being 152,000 and exports 28,000 tons. No transit traffic was reported. The 124 km road from Blagoveshchensk and Belogorsk is part of AH 31. An important event for Amur Territory was completion in 2010 of "Amur" highway Chita – Khabarovsk. This road has a design traffic intensity rate of 3000 vehicles/day and passes across Zabaykalsky Territory, Amur Oblast and Jewish Autonomous Oblast. The road connects Far East road network with the national road network as a link in the Vladivostok – Moscow – St. Petersburg highway (10 000 km) and AH 30 (Ussuriysk-Khabarovsk-Belogorsk-Chita).

Corridor 5: Korean Peninsula West Corridor and Corridor 6: Korean Peninsula East Corridor

The situation for Corridors 5 and 6 is particular. DPRK currently does not allow transit traffic and there is limited bilateral trade with GTR member countries. There is no point in going into elaborate review of the complex transport network of ROK as most of it does not constitute regional connection with GTR. Nevertheless there are a few important localized connections which are very relevant for the present transport study and merit attention. The first one is transport flows originating from Busan Port. Busan Port is a major hub and many of its shipping activities have a direct bearing on GTR. Secondly it is important to review the transport links of ROK and DPRK and the current trade and prospects. Thirdly ROK analysis is capable of shedding light on development required in DPRK to have functioning transport corridors linking Russian Federation and Northeast China with ROK.

Because of the GTR two transport corridors originating from Korean Peninsula (Corridor 5 and 6), the traffic analysis is separated between an East and West coast components. However, because of many common elements in Corridor 5 and 6, they are treated under the same heading.

²¹ The 650-meter-long pontoon bridge consists of ten barges with a carrying capacity of 1,000 tons, five of which were built by Russia and China each. This bridge can be used in winter time instead of an ice road. Experts say that the pontoon bridge is currently incapable of handling the whole cargo flow between Blagoveshchensk and Heihe because its barges are designed for one-way traffic. Its roadway will be expanded in further prospect. The bridge is incapable of solving all transport problems but may alleviate them. The pontoon bridge is reported to have opened for business on 31 March 12. Vehicle speed on the bridge shall be within 20 km/h; interval between vehicles shall be at least 70 m; permitted carrying capacity is up to 40 tons (for reference, up to 30 tons by ice road). The bridge handled 34 vehicles on its first day and up to 50 vehicles on following days. The main advantage of this bridge is that cargo transportation becomes possible in spring and autumn seasons when navigation is closed till ice road comes into existence.

²² For dry bulk, respectively 66 and 91 million tonnes, for liquid bulk, 61 and 21 million tonnes, for break bulk, 128 and 37 million tonnes.

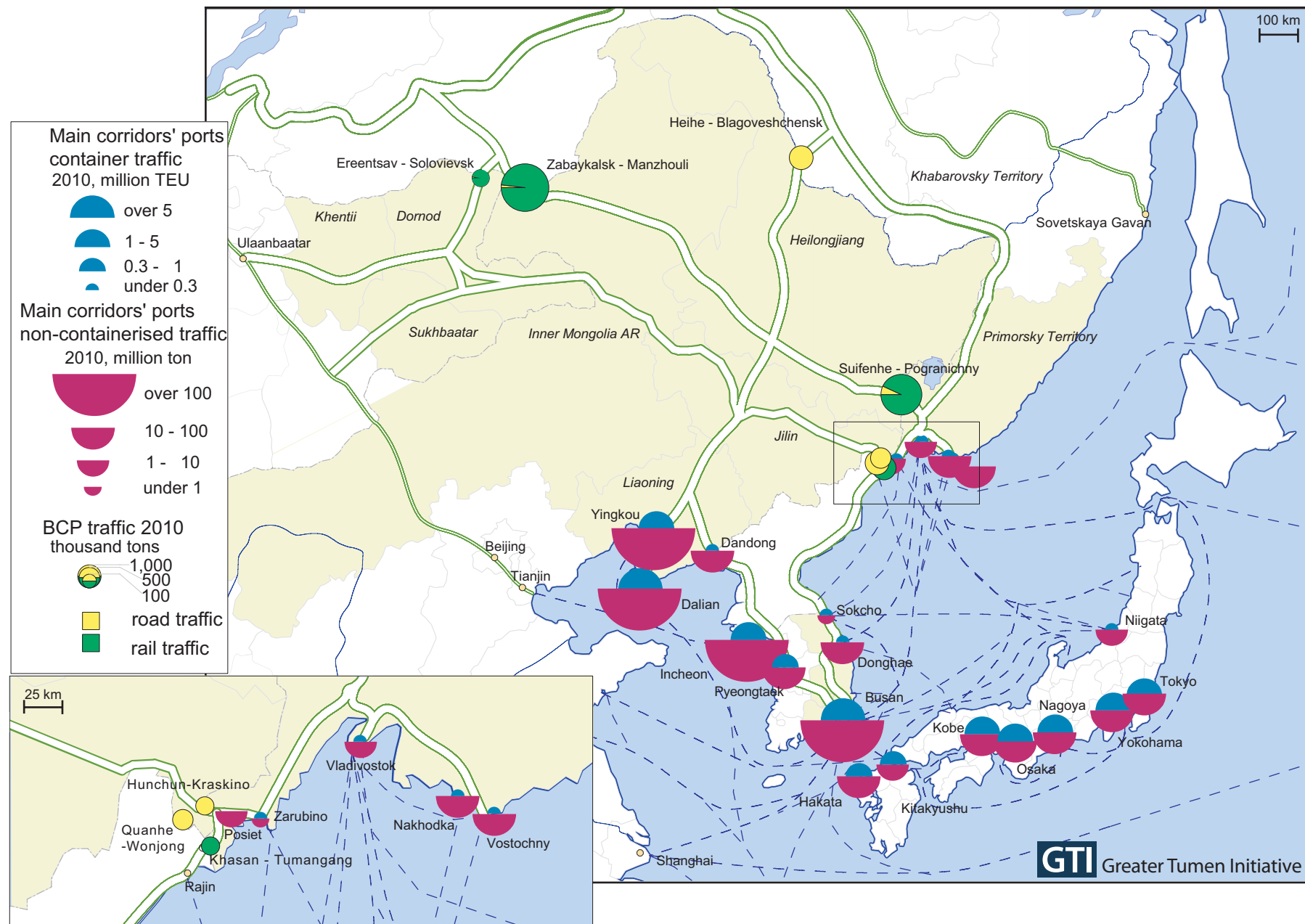


Figure 5: BCP traffic (rail and road), freight turnover (containers and non-containerized cargoes) of main ports along the trans-GTR transport corridors, 2010

Traffic relevant to review for the study are the maritime traffic from ROK with the rest of Northeast Asia, the particular land traffic between ROK and DPRK and the traffic at DPRK BCPs.

In the ROK West Corridor, there are three ports of importance all located in the Seoul vicinity: Incheon, Gwangyang and Pyeongtaek. In the ROK East Corridor²³, important ports are: Busan, Donghae and Sokcho. The table below gives in aggregate the volume of traffic from West and East ROK ports to Northeast Asia.

Table 3: Volume of traffic on West and East ports of ROK to Northeast Asian parts of PRC, Russia, Japan and Mongolia

	Export	Import	Transit Out	Transit In	Comments
West Coast					
Billion USD	47	35			PRC 90% of trade
Million Tons	11	31	1	1	PRC 70% of volume
East Coast					
Billion USD	36	52			PRC 53%, Japan 36%
Million Tons	10	20	14	20	X: PRC 58%, Japan 26%, M: Japan 60%, PRC 38% Tr O: PRC 42%, Japan 46% Tr I: PRC: 77%, Japan 21%

Source: Individual Country Report ROK.

The West and East Coast ports have about the same total trade value (USD 82 and USD 88 billion). As expected, the "Seoul vicinity ports" are largely trading with PRC while on the East Coast (Busan), Japan play a more prominent role. Imported goods were generally less valuable²⁴ than exported goods with a noticeable exception of Japanese goods imported through Busan (USD 6,300/ton). This reflects the fact that Korean exports have large components of high value electrical/electronic products. What is also noticeable is the dominant role played by Busan in transit of goods, being with Northeast Asian countries at least as important as the export/import trade. Busan received from Dalian and Tianjin Ports 3 and 4 million tons of transit goods while sending 1 and 2 million tons. Transits from and for Vladivostok were also important. The trade of Busan with Dalian Port is estimated to be 1.34 million tons with the transit in and out being 3.9 million tons. These volumes destined for cities in Northeast China are important as some diversion could take place through ports like Zarubino and Rajin.

Corridor 5 and 6 follow Asian Highways classifications being respectively AH 1 and AH 6. In DPRK, AH 1 starts at Sinuiju (border with China) then goes to Pyongyang, Kaesong before crossing the border with ROK at Panmun continuing to Seoul, then Daejeon, Daegu before reaching Busan. AH 6 starts in DPRK at Khasan, the border with Russia, continuing to Rajin, Chongjin, and Wonsan before reaching the ROK border at Kosong. In ROK AH 6 follows the East Coast, passing through Sokcho, Donghae before reaching also Busan. In DPRK, AH 6 length is 855 km and 475 km in ROK. The AH 1 length is 405 km in DPRK and 447 km in ROK. Road conditions and traffic in DPRK are not known but in ROK, AH 6 is in good condition and varies between 2 to 4 lanes with AADT traffic ranging from 7,000 to 70,000. AH 1 is also in good condition with a range of 4, 6 and 8 lanes and an AADT from 60,000 to 158,500.

The road and rail connection between DPRK and ROK has been re-established. There were 13 roads connecting the two countries which have been cut off including 7 national roads. However Inter-Korean Ministerial Meeting of August 2000 and 2002 agreed to reconstruct the Gyeongui route and the Donghae route. Construction²⁵ of all sections for the 4-lane Gyeongui road and 2-lane Donghae road was completed at the end of 2004. For one year in 2004, a total of 30,899 cars used Gyeongui and Donghae Line roads: 15,314 cars on Gyeongui and 15,585 cars on Donghae. These figures indicate that the roads

²³ Busan Port appears on both Corridor 5 and 6, Mukho Port located on East Coast of Peninsula is of lower importance and not included here.

²⁴ For instance, Imports from Russia (oil/gas, minerals) were on average USD 350/ton, while say exports to Northeast Asia from Busan were on average USD 3,500/ton.

²⁵ Gyeongui Line, of which construction for road connection began in September 2002, measures a total of 12.1 km. ROK handles the 5.1 km section from the Tongildaegyo Bridge to the Military Demarcation Line (MDL) and DPRK is in charge of the 7.0 km section from the MDL to Kaesong. Pavement of the sections in ROK and DPRK was completed at the end of October 2003 and the end of November 2004 respectively. Donghae Line road connection project covers a total extension of 24.2 km. For this, ROK is in charge of the 4.2 km section from Songhyeon to the MDL and DPRK is in charge of the 20.0 km section from the MDL to Kosong. Pavement of the sections in ROK and DPRK was completed at the end of October 2004 and the end of November in the same year respectively.

were used by an average of 2,500 cars a month or around 80 cars a day. However the Donghae roads have not been functioning since end of 2008.

The government has been promoting restoration of Gyeongui Line since 1985 in order to connect railway networks between ROK and DPRK. At the 8th Inter-Korean Economic Cooperation Committee meeting in March 2004, ROK agreed on providing materials for stations in DPRK necessary for the railway opening. The 27.3 km section of Gyeongui Line between Munsan and Kaesong was built as a single-track railway and the construction cost was approx. KRW 90.3 billion (1USD = 1200 KRW). As for Donghae Line, KRW 91.2 billion was invested in a 25.5 km single-track railway construction. At the 4th meeting of the Working Level Committee for the Inter-Korean Railway and Road Connection in April 2004, the basic agreement on railway operation between ROK and DPRK was initiated. With the basic agreement, together with vehicle operation agreement, a basic system for railway connection was secured. Gyeongui railway and road connection project was completed and the cargo train between Munsan and Bongdong began running beginning in December 2007. In such a process, a bilateral or multilateral talk on connection of TKR and TSR among ROK, DPRK and Russia was held, and the two Koreas agreed in 2002 on connection of Donghae railway and road as a result of the effort to cooperate among the two Koreas and Russia. Road opening, which was relatively free from political issue, was accomplished earlier, accelerating Kaesong industrial zone development project from 2003. Despite of successful completion of the trans-Korean railway project, Gyeongui line stopped its operation in December 2008 due to political deadlock between the two Koreas.

China is the main trading partner of DPRK (USD 3 billion in 2009) and there are 6 BCPs between the two countries over a 1,400 km border line. However most of the trade is concentrated at Dandong Port (Sinuiju for DPRK), though some 200,000 tons of trade is also occurring along Corridor 1 at Quanhe-Wonjong. Dandong Port throughput was 53 million tons in 2010 with 300,000 TEUs. Dandong is well connected by rail with Shenyang and is also on AH 1.

There are two important questions to mention here. The first one is the importance of the Kaesong economic zone/logistic centre developed by ROK located in DPRK near the border along Corridor 5. The other one is the economic zone and prospects of development of Rajin Port which is supported by ROK, Russia and China. By the end of 2012, a new 32-km-long combined gauge line (1520 mm and 1435 mm) has been laid in DPRK from Tumangang (Russian border) to Rajin, major repair of 20 km of tracks completed, a number of stations reconstructed, works in tunnels continued, communication and centralized signalling trunk lines installed, drainage systems rehabilitated, etc.

Japan and GTR Corridors

None of the six trans-GTR corridors run through Japan territory. At the same time, any sea routes from the GTR ports or the “exits” of the corridors should be regarded as essential extensions of the corridors. Without effective marine transport connections, the corridors cannot meet their intended objective. The first destinations of the extended maritime routes would be Japan and ROK. ROK connections are covered under Corridors 5 and 6. Therefore, connectivity with Japan becomes a key element to ensure positive development of the trans-GTR corridors. Hence there is the need to review the relationship of Japan with GTR participating regions and countries.

From Japan's point of view, the GTR, except for the coastal area of ROK, has not been a focus of attention. Nevertheless, the developments and well-functioning of corridors should have substantial impacts on Japan. Currently, major portions of freights are transported between Bohai Bay ports of China and Pacific coast ports in Japan with smaller portions using ports of the west coast. However, promoting the proposed corridors, namely the Tumen and Suifenhe corridors may affect trade patterns. Eastern Mongolia and Heilongjiang and Jilin provinces could then be connected to Japan via ports in Primorye region of Russia. Crossing the East Sea/Sea of Japan (500 miles) may take a maximum of two days.

The total export to Northeast Asia was in 2010, 84 million tons (30 million to ROK, 51 to PRC and 3 to Russia). Imports on the other hand were more with 143 million tons (26 million tons from ROK, 78 million tons from PRC, 39 from Russia). Exports to Russia have been decreasing while imports (gas, coal, crude oil) from Russia have increased rapidly. In order to look exclusively at Japan trade with GTR some adjustments have to be made: estimating the Northeast China share of the total PRC-Japan trade and estimating the trade to “European Russia” from the total. It was – conservatively – estimated that the Northeast China share of the total trade was only 5%. This then reduces the total volume of exports to GTR to 35 million tons with the total volume of import being 72 million tons. Most of the Japanese trade is carried by the ports located on the East Coast. Trade from the key East Coast ports in 2010 was 84 million tons and only 11 million tons from the three main West Coast ports (Niigata, Hakata and Kitakyushu). And for instance of the total Japanese exports to Dalian Port, only 15% would come from West Coast ports. The situation is even more dramatic when looking at the container traffic. The total container traffic of the key East Coast Ports was 16.85 million TEUs in 2010 while the total for West Coast ports was 1.22 million.

There are quite a few container shipping lines operating between Japan and Primorsky Territory. The majority of them transit through Busan before reaching Vladivostok. Traffic is constituted by feeder container ships carrying 600 to 1,200 TEUs on average. It seems that there is not enough demand to attract the large container vessels. Interesting is the RO-RO service between Sakai (Japan) and Donghae (ROK) and Vladivostok. The vessel however can only carry 130 TEUs and receives subsidies from the Japanese Tottori Prefecture. Also it should be noted that there is an “on call container service” between Niigata and Zarubino for the Hunchun market. However capacity is constraint on this line because of handling restriction at Zarubino Port. A serious limiting factor to the prospect of increasing shipping activities in the East Sea/Sea of Japan is the competition offered by Dalian Port. Because of economies of scale and high degree of competition, Dalian Port could offer shipping rates far lower than East Sea/Sea of Japan shipping (USD 400 for a 20’ container from Dalian to West Coast ports compared to an average of USD 1,200 for Zarubino/Vladivostok to West Coast ports).

In Japan, railway networks are not connected to the ports and trucking is very expensive²⁶. Therefore West Coast Japanese ports should be able to capture greater share of the shipping market to Northeast Asia. Shipping rates however are still relatively high and the limited number of services prevents market expansion. In terms of technical criteria like transport time, frequency, punctuality and capacity, each route in the East Sea/Sea of Japan has its advantages and weakness and there is ample room for improvements.

There are no specific major projects that aim to increase significantly the export volume from Japan to the GTR. In general, major industries like automobile manufacturing and electronics, along with their supporting industries, have already moved out of Japan or are moving their production capacities abroad instead of expanding their domestic capacities. Their domestic investment targeted to efficiency improvements or production of higher value added goods, along with R&D, usually don’t contribute to increase in export volume. Forecasts for the export volume to China in 2020 are 4.66 million TEUs with import volume being 4.33 million. More specifically, exports to the 4 Chinese Provinces of GTR would then be 392,000 TEUs with imports being 397,000 TEUs²⁷ (estimated on proportionality arguments). And, only a share of that volume would travel through the East Sea/Sea of Japan.

II.2. LIMITATIONS AND CONSTRAINTS

There are two types of constraints affecting the performance of the transport corridors, physical constraints and non-physical constraints.

Physical Constraints

Physical constraints concern transport infrastructures. Road, rail infrastructures or bridges or even ports could be missing along the corridors or could be in bad condition or congested; areas for handling freight could be lacking or inadequate; facilities at BCPs could be under design; passenger terminals could be absent, poorly designed or simply congested.

Perhaps the most obvious missing link, which has been documented elsewhere, is building the East-West rail corridor in Mongolia to help moving the vast coal production from the Gobi Desert to Asian markets. This is a key element for the development of the Tumen Corridor. Another essential element is – as mentioned before – the rehabilitation of the Hunchun-Makhalino railway to provide a transit route for potential traffic at Zarubino Port.

Mongolia in general and Eastern Mongolia even more lacks a proper road network. The reason is simple: it is a vast country with small and scattered population, harsh climatic conditions and limited traffic. Road construction is very expensive as is road maintenance. With the exception of paved roads around cities, the only paved connecting road is between Ulaanbaatar and Undurkhaan. Connecting roads between cities are usually in gravel and there are no road for the 200 km between Tamsagbulag and the border with China Nomrog. And, if a rail corridor is being constructed between Sainshand and Khuut, a well formed road is going to be required, perhaps in gravel at beginning and then paved.

In Northeast China, even without a thorough road inventory, it is recognized that there are road sections in GTI corridors which have low technical grade. Road sections to some BCPs are Grade 2 highways such as Manzhouli, Heihe, Suifenhe and Tongjiang, while others are below technical grade 3 and therefore are inadequate to cope with increasing traffic.

²⁶ For instance, Niigata-Tokyo for a 20’ feet container and for 350 km would cost USD 1,500.

²⁷ These 800,000 TEUs as noted is on the low side as in 2010, there was already 900,000 TEUs of Japanese lines in Liaoning ports.

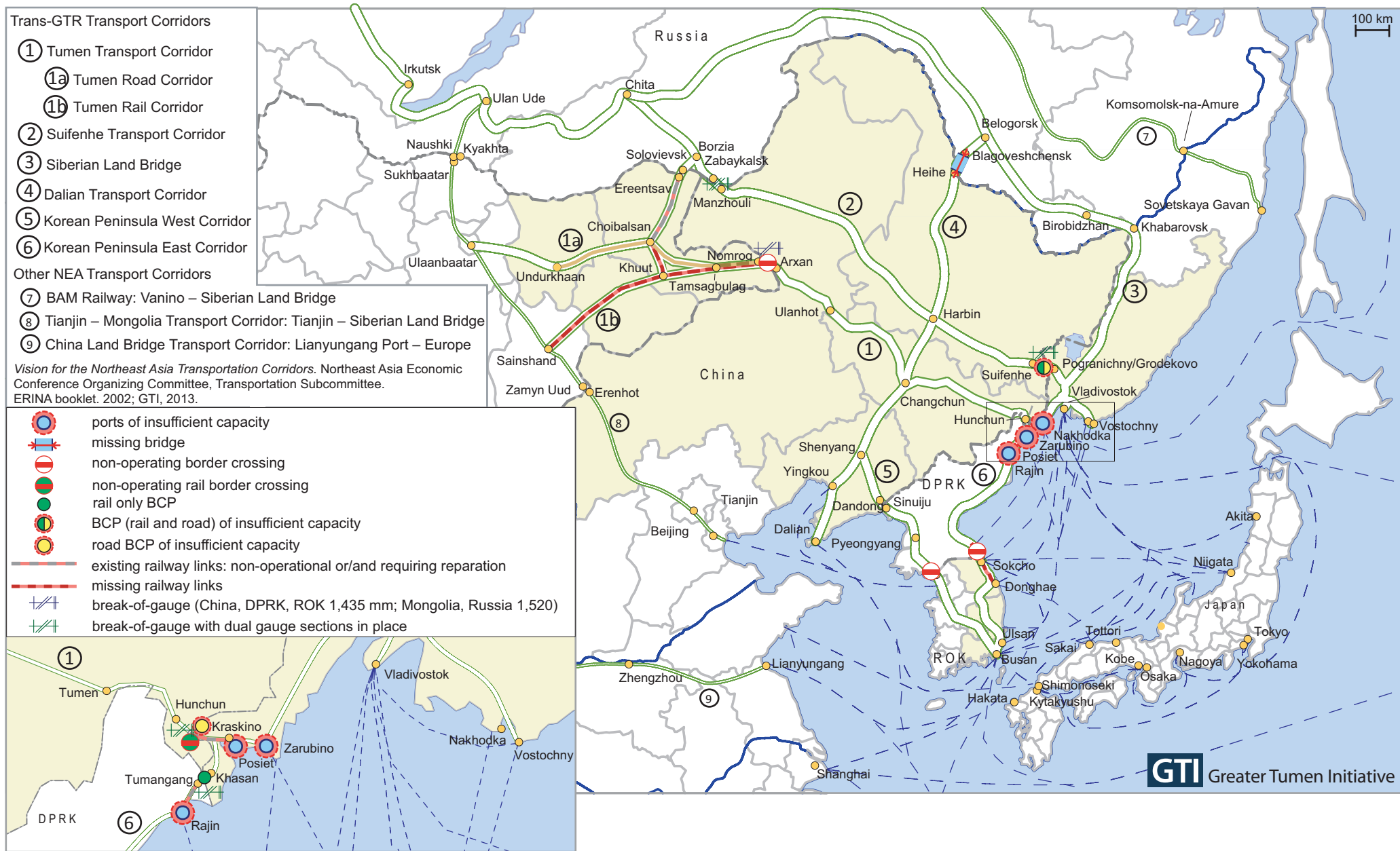


Figure 6: Major bottlenecks and BCPs along the trans-GTR transport corridors.

There are missing bridges which affect the performance of the GTR corridor. Perhaps the best example is the bridge missing on the Amur River between Heihe and Blagoveshchensk. The two cities are under a common economic zone (free trade) but the current transport arrangements between them are far from being optimal²⁸. The question of building a bridge has been on the agenda for the last 10 years. The little bilateral trade and the lack of transit trade are sometimes mentioned as an excuse for the construction of an expensive bridge. But Heihe is at the end of the Dalian Corridor (Corridor 4) reputed for heavy industrial traffic and Blagoveshchensk has good rail connections with the Trans-Siberian Railway. There is room for greater potential economic synergy between the two cities. A road/rail bridge could open new potential traffic between the Far East Russia and Northeast China and could provide an alternative for the large volume of freight traffic passing through Manzhouli.

The connection between Primorsky Territory and DPRK (Corridor 6) is far from being adequate. The rail line is still under rehabilitation and there is no road connection. Establishing a road connection would require building a bridge on the Tumen River.

The road connection of Hunchun to DPRK is at Quanhe BCP and this constitutes a close link to Rajin Port and the Free Trade Zone. In the past ROK and Japanese containers will arrive at Rajin Port and will be trucked to Hunchun through the Quanhe border crossing. But there is no rail connection there; with the only rail connection is at Tumen which is connected to Jilin and the whole Northeast rail network and the port of Rajin.

The basic road and railway connections have been re-established between ROK and DPRK and in principle Corridor 5 and 6 could operate. However, rail operations from ROK to DPRK, after one year operating, have ceased to function in November 2008. Once fully reconnected it is envisaged that the DPRK railway system would need major rehabilitation and upgrading. Electrification would need to be brought in, a network of double tracking installed and communication and signalization modernized.

ROK, DPRK and China railways are on a standard gauge (1435 mm) while Mongolian and Russian railways operate on a broad gauge system (1520 mm). This change of gauge at the borders force transshipments and impose delays. To palliate this problem dual gauge system have been put in place at busy rail BCPs as it is the case at Manzhouli.

A large volume of the transit freight traffic by rail from ROK and Japan is intended for the Europe market and could use the Trans-Siberian Railways (TSR). However the TSR is already facing serious congestion problems. Expected bottlenecks are at the following locations: at Zabaykalsk station and along the track leading to the TSR, in between Magocha and Urusha (congestion at stations and electric supply problems), around Belogorsk (electric supply problems), Baranovsky-Zarubino (track congestion). Transit traffic has been declining as illustrated in a section later.

In many of the GTR corridors, border crossing facilities are inadequate or inexistent and constitute a limitation to trade. Along the Tumen Corridor, rail and road BCPs are missing at Arxan/Nomrog between China and Eastern Mongolia and at Kraskino (rail BCP) on the line to Zarubino. If construction of a bridge between on the Amur River goes ahead, road and rail BCPs are going to be needed.

For rail and road traffic ICDs (Inland Container Depots), logistic centres and Inland Clearance Depots (also named ICDs) are lacking throughout GTR. Foreign trucks are usually prevented to travel in the neighbouring countries and this force transshipment. Therefore transshipment areas are required along road BCP and this is where goods will be cleared, hence the need for ICDs (Inland Clearance Depot). When goods are containerized with the required need of new traction, an area for sorting out the containers is needed, which is the ICD (Inland Container Depot) where custom clearance may or may not be carried out. If other services are added, like warehousing, container consolidation, banking, insurance and freight forwarder services, the facility then becomes a logistic centre.

There are in fact very few Inland Container Depots and Logistic Centres in the whole of GTR. There are two in Northeast China, at Harbin and Shenyang and one ICD/Logistic Centre at Zabaykalsk dealing with road and rail cargo and providing warehousing facilities. There is no rail ICD at Grodekovo, Pogranichny.

Ports serving the land GTR corridors if they are congested or with low productivity and high charges constitute serious constraints to the performance of the corridors. In the region, there are major ports involved in trading large volume of goods on the Pacific Rim, the rest of Asia and Europe. Despite handling high quantities of containers, dry and liquid bulks in a productive way, they are also candidates to further expansion and productivity gains. However the relevant question to ask is simple: do congestion, productivity gaps and high port charges constitute real constraints and limitations to the good functioning of

²⁸ This has been described before and the establishment of a pontoon could only be seen as a temporary measured

the GTR transport corridors, realizing that the volume of goods sent or coming from these corridors may be small compared to the total throughput? The answer would generally be no.

Vladivostok, Nakhodka and Vostochny ports are not facing any major constraint with the current traffic levels. Growth in traffic is however going to require adjustments and major investments. There is very little room for expansion in Vladivostok Port because of its location within the city. Any substantial increase in traffic would need to be accommodated by terminal built outside the city boundaries. There is limited railway capacity at Nakhodka Port and this is a serious constraint for expansion. There are no serious constraints for expansion at Vostochny Port.

The ROK ports dominated by Busan and Incheon do not face any serious constraints affecting the performance of the GTR corridors. As traffic grows, they will continue to expand. The same story applies to the Liaoning ports of Dalian, Yingkou and Dandong.

A different situation prevails for East Coast ports of DPRK and this is particularly true for Chongjin and Rajin ports as they constitute essential elements for the development of Corridor 6 and the transit traffic to/from China and Russia and the Korean Peninsula. Chongjin Port had an installed capacity of 7 million tons but is running far less. Rajin Port has a 3 million tons capacity and the recorded traffic may be in the order of 200,000 tons. To develop these ports, DPRK has been leasing piers to China and Russia on a long term basis. Rajin Port has no container terminal and outdated handling equipment. The nearby Rason Free Trade Economic Zone established in 2003 has not been able to attract foreign investors. The development of Rajin Port is part of the Khasan – Rajin project as well as the Tumen – Rajin project. As part of the development China is financing the rehabilitation of the road between Tumen and Rajin and Russia is completing the rehabilitation of the 52 km railway between Khasan in Primorsky Territory and Rajin Port.

Another serious constraint to the development of the Tumen Corridor is the situation of the ports in Primorsky Territory in the Peter the Great Bay, Posiet and Zarubino ports. Posiet Port is a dedicated coal export port, handling about 3 million tons per year. The port is currently going through an improvement programme and there are plans to increase throughput up to 4-5 million tons. Posiet Port is located in a very sensitive environmental zone; it faces serious constraints to expansion and has no intention to serve as a transit port for the Tumen Corridor. Zarubino has only two wharves, no specialized container terminal. Current traffic consists of machinery and equipment, metal scrap and a few containers. However it cannot receive 40' feet containers or even heavy loaded 20' containers as the handling equipment is old with severe lifting limitations.

There are no specific physical constraints in West Coast ports of Japan. They would like to increase their volume of activities through the East Sea/Sea of Japan with Russian ports including Zarubino, but the lack of demand and poor infrastructures on the opposite site have limited trade expansion along these shipping routes while shipping rates have been kept high.

Non Physical Constraints

The most serious constraint to the good functioning of all GTR corridors is the fact that rail movements from ROK are not allowed to travel through DPRK. However this report adopts the position that liberalization would eventually come and therefore supports the effort of ROK to develop a Korean Peninsula integrated transport system. As far as trade restrictions are concerned one should also mention the ban that Japan enforces on all exports destined for DPRK and all imports originating or shipped from DPRK. The ban was imposed in 2006 and has been renewed each subsequent year.

The analysis of the GTR transport corridors has shown that if bilateral trade does exist along the corridor, freight transit on the other hand was either minimal or inexistent. The aim of GTR transport corridors is to promote regional trade and transit trade. There are a few reasons why transit trade is not flourishing along the GTR transport corridors and one of them is simply because there are no general and comprehensive transit agreements which have been endorsed by all participating governments.

Trade in GTR is governed by a series of bilateral transport and trade agreements; the main ones are listed below:

- Agreement between the Government of the Russian Federation and the Government of Mongolia about border crossing points and the simplified transportation through Russian-Mongolian border (Ulaanbaatar, August 10, 1994) as amended on March 5, 2007;
- Agreement between the Government of the Russian Federation and the Government of the People's Republic of China about international automobile transportation (Beijing, 18 December 1992);
- Agreement between the Government of the Russian Federation and the Government of the People's Republic of China about border crossing points on the Russian-Chinese border (Beijing, 27 January 1994);

- Agreement between the Government of the Russian Federation and the Government of the People's Republic of China about a Merchant Shipping routine on the boundary rivers and adjacent rivers and lake (Moscow, 21 December 1957);
- Agreement between Administration of Primorsky Territory of the Russian Federation and the National Government of the Heilongjiang province of the People's Republic of China about trade and economic cooperation (Hutou, 30 August, 2000);
- Agreement between Administration of Primorsky Territory of the Russian Federation and the National Government of the Jilin province of the People's Republic of China about trade and economic cooperation (Moscow, 25 February 1999);
- Program of cooperation between Far East and Eastern Siberia regions of the Russian Federation and the Northeast of the People's Republic of China (2009-2018), approved on 23 September 2009 by heads of Russia and China;
- Program of strengthening trade relationship and economic cooperation between the Russian Federation and Japan (adopted in Tokyo on 05 September 2000);
- 1st and the 2nd Inter-Korean Ministerial Talk for Agreement between ROK and DPRK about reconnection of Gyeongui Line (July and August 2000);
- 7th Inter-Korean Ministerial Talk for Agreement between ROK and DPRK about reconnection of Donghae Line (August 2002);
- The Russian-ROK joint statements (Seoul, 27 February 2001, 17 October 2006);
- The Moscow Declaration on an establishment of creative partnership between the Russian Federation and Japan of 13 November 1998.
- Intergovernmental Agreement on the Asian Highway Network (was discussed and adopted in Bangkok on 18 November 2003, a signing ceremony was held in Shanghai, China, on 26 April 2004);
- Intergovernmental Agreement on the Trans-Asian Railway Network (entered into force on 11 June 2009, in Russia approved by Russian Federation Government resolution No. 1536-r of 8 November 2006);

In addition, there have been attempts to resolve transit issues under the two following initiatives:

- Draft «Agreement on Sea-land Intermodal Transportation using highways and ports and other transport infrastructures between the Government of the Russian Federation and the Government of the People's Republic of China» (being discussed since 2010 - no effective results as yet);
- Idea of the organization of Northeast Asia sea-land Intermodal Transport Cooperation between the Governments of the People's Republic of China, Japan, The Republic of Korea and Russian Federation (discussed on 20-22 December 2011 - there is a constructive Agreed Minutes of Consultation in Harbin, China).

There is presently an issue concerning the treatment of transit goods by Custom officers. Sealed transit goods should not be inspected and taxed and no charges or duties should apply. They should be allowed to travel without delay to their exit destination in the country. Often, however, Customs officers are at loss on how to deal with transit goods and carry out unnecessary procedures causing delays²⁹.

A second issue concerns the restrictions imposed on entrance of foreign vehicles. Most GTR countries posed heavy restrictions to the free circulation of foreign trucks. They are either completely banned or allow only to drive to the nearest town. A notable exception is Mongolia which has adopted a more liberal regime.

Despite limited progress, there are still no harmonization on Customs procedures and regulations. An electronic Single Window system should be the norm or at least the targeted objectives; but in fact such improvement at the present BCPs on the GTR transport corridor seems to be quite remote, even if countries like Japan, ROK, and China have already adopted forms of Single Windows systems or are in the process of adopting them for their port operations.

²⁹ It is reported that sealed containers from Jilin Province in China, after passing the Chinese Customs at Hunchun would face difficulties when entering Russia at Kraskino on Primorsky Territory. Russian Customs officers would not recognize the Chinese seal and would inspect the container which is in transit before putting a new Russian seal to allow free circulation in the territory.

III. PROSPECTS OF TRANSPORT CORRIDOR DEVELOPMENTS

III.1. TRADE PERSPECTIVE ALONG THE TRANSPORT CORRIDOR

The purpose of this section is first to understand the prospects of trade in the GTR and how the future trade will move along the transport corridors and secondly to highlight the development issues which are guiding the prospects along the corridors.

Using the year 2010 as a basis, forecasts were prepared for the year 2020. A medium term time horizon, 2020 was preferred over a short term period, 2015 or a long term horizon 2030. A short term period would be much a copy of the current situation and would not give enough time for the required changes and investments to be realized. A long term period, 2030 would contain too many uncertainties that would make the selection of investment and policy changes too difficult to identify.

From the above reviews of the corridors performance a few things have been learnt. By far, in all the corridors, domestic movements dominate and inter-regional trade when it exists only accounts for a small proportion of the total traffic. Two corridors have been recognized as priority corridors, Corridor 1 or Tumen Corridor and Corridor 2 or Suifenhe Corridor. The Suifenhe Corridor is the one which currently shows the highest regional trade, namely between Northeast China and the Russian Far East. The Tumen Corridor do not account yet for large volume of regional trade but offer high potential. The Dalian Corridor is essentially a domestic corridor with very dense traffic from the industrial cities located along the corridor. Dalian and Yingkou ports are however actively trading with GTR countries. The Siberian Land Bridge also is essentially a Russian corridor even if it carries some transit traffic from GTR. The two Korean Peninsula Corridors may expect great potential once DPRK opens up. And an important conclusion to stress again is that, currently there is no or very little transit traffic along the land GTR corridors but this is precisely one of the objective of the study to see how corridors can be improved to facilitate transit traffic.

Because of the objective of promoting regional trade in the GTR transport corridors, what matters most is the traffic at the land BCPs and at the gateway ports. Statistics on freight (and passenger) traffic has been gathered at all the land BCPs of the corridors expressed in tonnage. Then year 2020 forecasts were estimated based on a conservative and optimistic outlook. Conservative outlook is essentially an adjusted trend analysis. It is adjusted because it also reflects the opinion of experts crafted in a world where expressed constraints and limitations are only partially removed. The Optimistic outlook, on the other hand, expresses the opinion of experts, integrating all the discussed potentials and assuming that all constraints have been eliminated. Individual country reports contain generally ranges of forecasts. However the present Summary Report, in order to strengthen and simplify the message, sticks for most cases to a unique forecast number.

Under the forecast of 2020, it is assumed the followings: custom procedures improved for all GTR participating countries; road and rail missing links along transport corridor completed; greater liberalization in DPRK allowing ROK freight trains to run through; container feeder ships operating from Japan to Zarubino to connect with Northeast China; planned port expansions in GTR ports completed including Zarubino and Rajin; Trans-Siberian Railway carrying more transit containers from Northeast Asia to Europe than presently the case.

In the following table, the freight forecasts by road and rail at the land BCPs are summarized³⁰. Since there is not yet any connection between Eastern Mongolia and Northeast China (at Arxan), the only foreign and regional trade along the Tumen Corridor occurs at Hunchun through its connection with Primorsky Territory and DPRK. Then there are only 293,000 tons of goods being traded in Hunchun (2010) by road with 200,000 tons for trade with DPRK (Quanhe) and 93,000 tons for trade with Russia (Kraskino in Primorsky Territory). This is little and shows that Tumen Corridor does not yet operate as a regional trade corridor since there is no functioning railway operating throughout the corridor to provide regional connectivity. But by 2020, it is envisaged that the situation would be drastically changed with a forecasted total regional trade reaching 18.35 million tons. A very large part of the increase in traffic is due to the export of coal coke through the Arxan border in Inner Mongolia travelling along the Chinese railway system and accounting for 15.2 million tons³¹ though it is not yet clear which distance the coal will travel on the Tumen Corridor. The other major change would be that containers are now coming to Zarubino Port and would be travelling to Hunchun through the now functioning railway connection between Zarubino Port and Hunchun. This concerns traffic of 300,000 containers³² to and from Japan ports on the West Coast. It is assumed that 10%

³⁰ In addition to the Land BCPs, freight forecast is also given for Zarubino Port because traffic at the port has a direct impact on the freight volume going to Hunchun.

³¹ Of that 15.2 million tonnes 10.6 million would be destined to Northeast China, 2.3 million for ROK and 2.3 million for Japan;

³² Traffic forecasts at Zarubino Port are explained in details in next section.

of the containers would travel by road. The traffic at Hunchun/Kraskino is now assumed to be 2.8 million tons, 2.4 million tons by rail and 360,000 tons by road. The non-containerized traffic at Zarubino has also increased and 1/3 is assumed to be carried by rail.

However the most active transport corridor remains the Suifenhe Corridor as the total trade between Russia and China through the corridor was close to 30 million tons in 2010 (29.23 million) largely carried by rail. The Zabaykalsk/Manzhouli BCP shows the highest traffic volume with 21.8 million tons, with Pogranichny/Suifenhe accounting for 7.5 million tons. Traffic consists mostly of dry bulk (coal and other minerals) and liquid bulk (petroleum products) imported from Siberia to China. It is assumed that the pattern of trade would remain the same in 2020 with trade continuing to expand. It is forecasted a regional trade of 41 million tons in 2020.

The Siberian Land Bridge Corridor is essentially a domestic Russian Corridor, though it carries trade for China as well as Mongolian export. The Eastern Mongolian BCP with Russia (Ereentsav/Solovievsk) shows some little rail traffic (38 million tons in 2010). However in 2020 this will increase to 570,000 tons with the export of coal by Mongolia.

Dalian Corridor is the main corridor of Northeast China and carries most of their exports and a large part of their imports through Dalian or Yingkou ports. There is still yet no rail connection between Northeast China and Russia along the Dalian Corridor. Trade by road at the BCP (Heihe/Blagoveshchensk) was 178,000 tons in 2010 and is expected to reach 419,000 tons in 2020. Should a bridge be built on the Amur River, the traffic would then be considerably higher.

Korea Peninsula East and West Corridors are not functioning properly because of the situation with DPRK. However on the East Corridor, progress is being realized to improve connection between Primorsky Territory (Russia) and DPRK through the full rehabilitation of the rail connection. Traffic by rail (Russian exports) was already 131,000 tons in 2010 and is now expected to reach 5.4 million with export of Russian coal by rail to the Rason-Rajin area in DPRK.

Table 4: Freight Flows along Corridors

GTR Freight flows at BCPs and Ports (in thousand tonnes)						
BCP/Port	2010			2020		
	Road/port	Rail	Total	Road/port	Rail	Total
Tumen Corridor						
Nomrog/Arxan (a)	0	0	0	10	15,200	15,210
Kraskino/Gvodezvo/Hunchun (b)	93	0	93	360	2,415	2,775
Quanhe(Hunchun)/DPRK (c)	200	0	200	360		360
Subtotal	293	0	293	730	17,615	18,345
Zarubino Port (d)	337		337	3,165		3,165
Suifenhe Corridor						
			0			0
Zabaykalsk/Manzhouli (e)	403	21,358	21,761	710	30,740	31,450
Pogranichny/Suifenhe (f)	514	6,956	7,470	732	8,780	9,512
Subtotal	917	28,314	29,231	1,442	39,520	40,962
Siberian Land Bridge Corridor						
						0
Solovievsk/Ereentsav (g)	1	37	38	4	565	569
Dalian Corridor						
						0
Blagoveshchensk/Heihe (h)	178		178	419		419
Korea Peninsula East Corridor						
						0
Khasan/Tumangang (i)		131	131		5,400	5,400
Grand Total	1,726	28,482	30,208	5,760	63,100	68,860
Grand Total Land Corridors	1,389	28,482	29,871	2,595	63,100	65,695
Note: numbers for Zarubino traffic are under "road"; ICRR: Individual country report Russia ICRC: Individual counntry report China (a) 15.2 MT of coal from Mongolia (10.6 China, 2.3 ROK, 2.3 Japan); (b) 2010: ICRR; 2020: 10% of 300,000 TEUs by road, rest by rail; 50% non containerized on corridor with 30% by road, 70% by rail; (c) 2010: ICRR; 2020, 6% growth (d) 2010: ICRR; 2020: Export, Import 10% growth, transit in & out 100,000 TEU equal share (e) 2010: ICRR for road & rail; 2020: ICRR optimistic (f) 2010: ICRR; 2020: road 6% growth, rail export optimistic, import conservative ICRR (g) 2010: ICRR; 2020: Export ICRR optimistic; import conservative + 0.5 MT of Mongolian coal; (h) 2010: ICRR; 2020: ICRR optimistic; (i) 2010: ICRR; 2020: ICRR optimistic;						

III.2. MAIN DEVELOPMENT ISSUES

In addition to the above forecasts on land BCPs and in order to strengthen the picture of the traffic on the GTR transport corridors, there are few important issues that need to be addressed as listed below:

- Zarubino Port development and movements of Northeast China containers moving through the East Sea/Sea of Japan;
- Forecast of the shipping volume from West Coast Japan to the East Sea/Sea of Japan in general and Primorsky Territory in particular, including forecast of trade with Northeast China provinces;
- Rajin Port development and trade between Northeast China and DPRK;
- Contribution of the Trans-Siberian Railways to transit to Europe for cargo from Japan, ROK or even Northeast China;
- The issue of passenger traffic along the corridors;
- The issue of exporting Mongolian coal.

Zarubino Port

There are many issues and uncertainties with the future development of Zarubino Port. The port could play a determinant role in making the Tumen Corridor a dynamic and vibrant corridor but pressing issues and challenges would have to be met and resolved first.

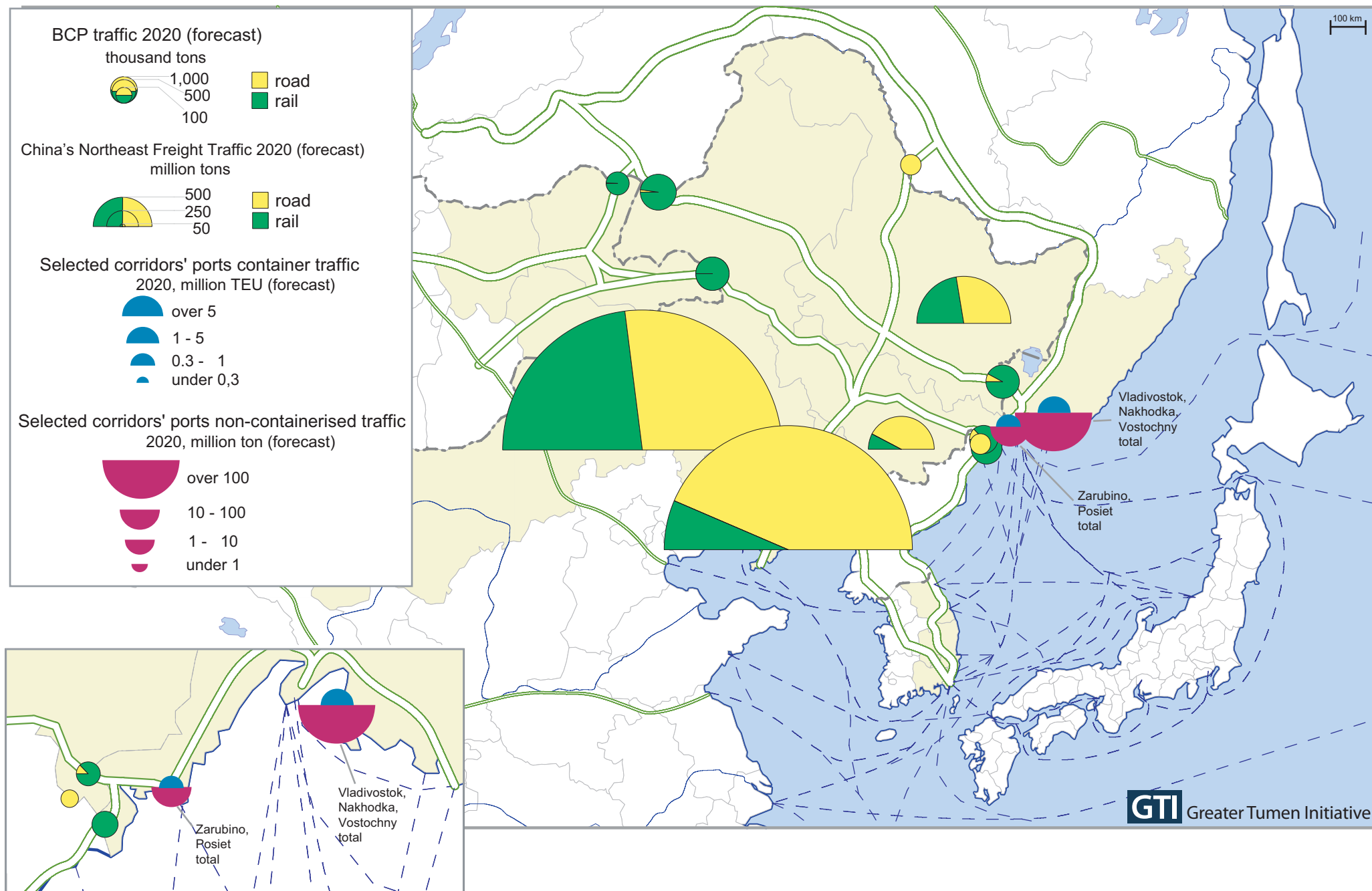


Figure 7: Freight traffic at selected ports, BCPs and provinces 2020 (forecast).

Zarubino started as a local and fishing port. In 1995 it went to some port expansion focusing on international trade. It has since concentrated in importing Japanese used cars, machinery and equipment while exporting metals, scrap products. Since the beginning of years 2000, traffic has not picked up and is in fact in declining trend especially for containers. Traffic was reported to be 128,000 tons in 2010 with only 2,180 TEUs. The maximum TEU volume was reached in 2005 (11,000) with maximum overall throughput being reached in 2008 (252,000 tons).

Inadequate handling equipment at the port and the closure of the railway line to Hunchun can explain the present low container traffic. The non-operation of the railway line also forbids any large volume of bulk freight coming from or going to Northeast China through Hunchun and Jilin Province and constitutes a major impediment for the development of Zarubino Port.

Road infrastructures connecting China to Primorsky District through Kraskino are now quite adequate but crossing the border for freight takes time. Goods need to be transhipped and Customs formalities on both sides are a complex matter.

It is not clear what are the intentions of the current owners of the port and if they are prepared to provide financing if large expansions could become economically justifiable. Also it should be noted that the port is located in a sensitive environmental zone and any major expansion would need to be carefully planned.

All the above are serious challenges that would need to be overcome to consider a serious program of expansion for the port. There are on the other hand quite a few positive factors which justifies considering such a large sustainable port development.

According to forecasts from the Chinese Ministry of Transport, the total volume of container from Northeast China to Japan and Korea in 2015 will reach 2.5 million TEUs and likely 3 million TEUs in 2020. Container volume through Zarubino in 2020 is however forecasted to be about 300,000 TEUs. Only goods originating or destined to Jilin Province would have advantage passing through Zarubino and they would have to compete with Rajin Port in DPRK. The 300,000 TEUs assume that if not all at least the vast majority of the impediments listed have been eliminated.

In October 2010, GTI Secretariat conducted a survey on potential traffic for Zarubino under a “no constraints scenario”³³. A total of 15 responses out of 68 questionnaires posted were returned. Because answers were so disparate, the attempt to calculate an average figure for the year 2020 has little meaning, though some individual answers are worth noting. The Chinese Ministry of Railway estimated for year 2020 1.8 million tons of imports for Northeast China and 0.5 million tons of exports passing through Zarubino Port³⁴ for Northeast China. Most of the goods would normally be containerized. Busan Port estimated an overall potential of 160,000 containers between ROK and Zarubino Port for the year 2020.

There is a consensus that Zarubino Port should not handle “dirty bulk commodities” like coal specializing more in transit containerized goods between Japan, ROK and China. The port however would continue to receive break bulk commodities like Japanese used cars for the Russian markets, machinery and equipment and scrapped products. This non containerized cargo could reach 1 million tons. There is more uncertainty in the potential for grain export, though it is estimated to reach 1 million tons under an optimistic scenario. If Mongolia coal would travel on the Tumen Corridor, then the export port should be Posiet and not Zarubino.

The location of Zarubino provides an opportunity to handle significant volumes of transit goods for the Jilin Province. However one should adopt a realistic approach for the future of the port and avoid falling in the trap of over designing expensive infrastructures. Benefits of any port expansion programme would come after 2015, at the earliest. Putting in place infrastructures and getting the market to handle 300,000 TEUs or more when the current traffic is only a few thousands is a huge challenge which is going to require quite a

³³ The survey respondents were asked to take into consideration the following assumptions on the circumstances encompassing the operation and development of Zarubino port in the long-term:

- no technical constraints on port and related infrastructure (roads, railways and border-crossings) handling capacities;
- border crossings formalities and procedures in Russia are transparent, simplified and harmonized to ensure the smoothest possible manner for cargo transit operations;
- a positive global development scenario which fuels high economic growth rates in NEA and the Asia-Pacific region as a whole.

³⁴ Chinese imports were estimated to be cars and car parts, machinery and equipment, electronics, agricultural products with exports being textile and garments.

few years to achieve³⁵. In the table below two scenarios are proposed for Zarubino Port development, a conservative and an optimistic.

Table 5: Zarubino Port Scenarios

Commodity	2010		2020 Conservative		2020 Optimistic	
	TEU	Tonnes	TEU	Tonnes	TEU	Tonnes
Containerized goods (a)	2,180	17,330	300,000	2,385,000	450,000	3,575,000
Grain (b)						1,000,000
Non Containerized goods (c)		300,000		780,000		1,000,000
Total	2,180	317,330	300,000	3,165,000	450,000	5,575,000

Notes: (a) 2010 figures are from the Russian Report, conservative from Chinese Report and optimistic from Busan Report; 15% for empty containers; average load 7 tonnes;

(b) 1,000,000 tonnes of grain from Russian Report (conservative);

(c) Non containerized 2010 from Russian Report, conservative 10% growth rate,

Therefore it is foreseen that, assuming that most if not all the challenges are met, port throughput potential in Zarubino could vary between 3 and 5.5 million tons in the year 2020 with containers being in a range of 300,000 to 450,000. It is then recommended to design long term facilities for a maximum of half a million TEUs but building such capacity in stages.

Rajin Port

Rajin or Najin Port is located in DPRK only at 60 km from Zarubino Port. It is therefore not surprising that the two ports can be seen as competitors. When it comes to handle container transit traffic from ROK or Japan for Northeast China, the two ports are certainly in competition. The container traffic, at the beginning could be split but both of them cannot aspire to become large container ports because they are too close to each other.

Like in Zarubino, Rajin Port requires a series of challenges to be met to become a vibrant regional port. This has been noted above but could be repeated again. Firstly Rajin Port and Rason Economic Zone need a well-integrated regional transport infrastructure network. Most of them are ongoing with external financing. This includes the 32 km completion of the dual gauge railway track between Tumangang and Rajin and the 50 km road between Rajin and Wonjong (near the border) both financed by China. The completion of the 52 km Khasan – Rajin railway financed by Russia completes the list of infrastructure projects under construction to support the development of the Rason Economic Zone and Rajin Port which have not grown according to expectation.

China, Russia and ROK are all involved in the development of Rajin Port. The issue here is that it is not yet very clear in which direction Rajin Port should go. There have been talks of bringing 5 million tons of coal from Russia for export and also to build a container terminal to attract the transit traffic of Northeast China. From a regional perspective, under the assumption of liberalization of DPRK, it would be profitable to consider the development of Rajin Port and Zarubino Port together and target fruitful complementarity to avoid costly competition based on still uncertain container transit market.

Northeast China Trade with Japan West Coast ports and East Coast ROK ports

Freight and passenger movements on the East Sea/Sea of Japan have their importance as they constitute the marine continuation of the two priority corridors, the Tumen and Suifenhe Corridors. Estimates by PRC National Consultant of the trade from Northeast China were discussed above. These estimates needed to be confirmed by ROK and Japan.

Analysis of Japanese port activities reveal that 1.5 to 2 million tons were exported to Northeast China with 4.5 to 5.0 million tons imported. But Japanese West Coast ports³⁶ accounted for only 15% of the exports and 19% of the imports. Estimates of the TEU volume between Northeast China and Japan were carried out using a freight ratio (tons) giving an estimates of 700,000 TEUs in 2015. However it is reported that in 2010, there was already 900,000 TEUs of trade from Dalian and Yingkou ports to Japan. Therefore a conservative estimate suggests a figure of 1 million TEU for 2020. The question is which proportion of that container traffic will travel through East Sea/Sea of Japan reaching ports like Rajin and Zarubino. Dalian

³⁵ Though 300,000 TEUs are quoted under the Conservative scenario, this still constitutes more a potential estimate than a confirmed forecast. The time to build the infrastructure and to attract shipping lines suggest that in a first stage achieving 100 to 150,000 TEUs in 2020 would already be considered as an achievement.

³⁶ In this case the Japan West Coast ports were: Niigata, Kitakyushu and Hakata.

area ports would still remain the main attraction. If constraints are lifted there could be a potential of say 20% of the total estimated container traffic (200,000 TEUs) that could pass through Zarubino³⁷.

According to the ROK Report, the estimated total trade between Jilin Province and ROK in 2020 would be approximately 1.5 million tons or 200,000 TEUs³⁸. ROK would probably use Rajin Port and the railway/road network for the movement of container more than Zarubino Port. Therefore assuming a potential of 75,000 to 100,000 TEUs for ROK trade to Northeast China through Zarubino Port seems quite reasonable.

Trans-Siberian Railway (TSR) contribution to transit trade

The GTI Corridor 3, “Siberian Land Bridge” is a TSR section within GTR. Corridor 2, “Suifenhe Corridor” connects with TSR and Corridor 4, “Dalian Corridor” would eventually connect with TSR. The objective of ROK Railway is to integrate with DPRK Railway and then fully connect with China Railway and TSR. ROK as shown in the table below has in the past sent and received containers from Europe using the TSR land bridge. The TSR land bridge has often been promoted by international organizations as an interesting alternative to the Xinjiang-Kazakhstan land bridge and to shipping as the saving in time is significant³⁹.

Therefore the possibility of transiting goods from Northeast Asia to Europe through the TSR cannot be ignored even if such option may not be perceived as a priority. Below statistics on transit traffic on the TSR in the last 10 years is presented.

Table 6: Transit Traffic on TSR

Year	Details	TEU/Tonnes (thousand)
2002	Overall container	74.7
	Bulk (coal and grain)	106
2003	Overall container	118.7
2004	Overall container	122.5
	Bulk (grain)	74.5
2005	Overall container	113.9
2006	Overall container	10.5
2007	Overall container	3.1
	Bulk	625.6
2008	Overall container	0.4
	Bulk	344.1
2009	Overall container	0.5
	Bulk	394
2010	Overall container	11.3
	Bulk	136.1
2011	Overall container	28.9
	Bulk	8
	Total Containers	484.5
	ROK % of containers	78%
	Total Bulk	1688.3

Up to 2006, the TSR was transporting sizeable volume of containers in transit between Europe and Asia with 80% of that traffic being ROK containers. Things started to deteriorate in 2006 when tariffs imposed by railway operator JSC RZD became no more competitive with shipping rates which were declining. Customs complications, infrastructure bottlenecks along the lines and policies to discourage such traffic added to the problems. Asian container transit traffic almost disappeared from 2006 to 2010. There are signs that it could start again. The TSR is 10,000 km double track electrified rail line between Moscow and Vladivostok. It has the capacity to carry 130 million tons including 600,000 containers for export/import and 300,000 for transit.

If TSR is capable of offering attractive tariffs, then it becomes again a valuable alternative to shipping and will strengthen the “raison d’etre” of all GTR corridors.

³⁷ At least for some times Zarubino will be preferred to Rajin for Japan.

³⁸ Based on 7 tonnes of load per TEU.

³⁹ Ideally it could take only 15 days from Vladivostok to Moscow, cutting the travel time by more than 1/2;

Passenger Traffic along the GTR Corridors

There is no specific development issue with passenger traffic along the corridors. The development of the transport corridors in GTR has been and will continue to be driven by regional freight demand. Passenger movements then follow. The smooth seamless movements of passengers throughout GTR do require adequate infrastructures (BCP, Terminals) and when missing they should be highlighted. Regional passenger movements would grow over time as populations are getting richer but the real distinct growth will come from air services and this will temper the growth in other transport modes.

Because of the above reasons, the present report has devoted far less attention to passenger movements than freight movements. Assessing fully the situation and presenting detailed forecasts are however contained in the individual National Reports. Below are passenger flows and forecasts.

Table 7: GTR Passenger flows

GTR Passenger flows at BCPs and on sea routes						
(in thousand passenger)						
BCP/Port	2010			2020		
	Road/port	Rail	Total	Road/port	Rail	Total
Tumen Corridor						
Tunmog/Arxan (a)	0	0	0	4	0	4
Kraskino/Gvodezvo/Hunchun (b)	213	0	213	490	50	540
Quanhe(Hunchun)/DPRK ©	150	0	150	270	0	270
Subtotal	363	0	363	764	50	814
Zarubino Port (d)	22		22	50		50
Suifenhe Corridor						
Zabaykalsk/Manzhouli e)	1,360	55	1,415	1,500	55	1,555
Pogranichny/Suifenhe (f)	571	162	733	1,485	240	1,724
Subtotal	1,931	217	2,148	2,985	295	3,279
Siberian Land Bridge Corridor						
Soloviesk/Ereen Tsav (g)	11	1	12	20	2	22
Dalian Corridor						
Blagoveschensk/Heihe (h)	1,056	0	1,056	1,901	0	1,901
Korea Peninsula West Corridor						
Khasan (i)	0	15	15	10	40	50
Grand Total	3,383	233	3,616	5,729	387	6,116
Grand Total Land Corridors	3,361	233	3,594	5,679	387	6,066
Note: numbers for Zarubino port are under "road"; ICRR: Individual Country Report Russia ICRC: Individual Country Report China; ICRM: Individual Country Report Mongolia (a) in 2010, not yet open; 2020 limited road based on ICRM; (b) 2010: ICRR; 2020: ICRR conservative plus 50 for rail (transit); (c) 2010: ICRC; 2020, 6% growth (d) 2010: ICRR; 2020: almost no growth (e) 2010: ICRR for road & rail; 2020: ICRR optimistic (f) 2010: ICRR; 2020: road 10% growth, rail 4% growth, as ICRR conservative (g) 2010: ICRR; 2020: 6% growth; (h) 2010: ICRR; 2020: 6% growth as ICRR optimistic; (i) 2010: ICRR; 2020: close to ICRR optimistic but allows for road traffic;						

The above table displays passenger traffic at border crossing points only. Traffic along corridors in respective countries present less interest as the aim of the study is to ensure regional connectivity and seamless transit and movements of people across borders and connecting seas.

As it was the case for freight flows, it is the Suifenhe Corridor which shows for its two border crossing points, the highest volume of passenger movements with, for 2010, 1.4 million at Zabaykalsk/Manzhouli and 730,000 at Pogranichny/Suifenhe. It is foreseen little growth at Manzhouli but strong growth at Suifenhe giving a total of 3.3 million regional passengers in 2020. However it should be noted that most of the road passengers are "shoppers or traders" as part of the very vibrant market activities located near the BCPs.

Another important BCP for passenger movements is Blagoveshchensk/Heihe where all movements are by road (ferry, temporary bridge) because of the absence of a bridge on the Amur River preventing a railway connection. There was 1 million crossing in 2010 and a forecast of close to 2 million in 2020.

Overall, it should be noted that there are relatively few rail passengers and most of them are long distance and transit passengers.

There are a few shipping operators between ROK and Japan to Primorsky Territory (mostly Vladivostok) but the volume of passengers has been declining and some ferry services have been interrupted. The total volume is probably now only a few ten thousand passengers per year and with airline competition, the prospects are not good.

Moving Mongolian Coal along GTI Corridors

Mongolia intends to route large volumes of the Gobi coal production through Eastern Mongolia shipping them to foreign markets through the Tumen Corridor. It is estimated that the approximate volume of coal to be transported by rail in 2020 would be 66 million tons. This volume of coal will be distributed to following routes:

- Per year- 23.2 million tons from Nariin Sukhait to Shivee Khuren;
- Per year- 18.1 million tons from Tavan Tolgoi to Gashuun Sukhait;
- Per year- 24.7 million from Tavan Tolgoi to Sainshand;
- Per year- 15.7 million from Sainshand to Khuut;
- Per year- 15.2 million tons from Khuut to Sumber BCP (Nomrog);
- Per year- 0.5 million tons from Khuut to Choibalsan.



Light color line means potential transit traffic from Russia, figures show projected traffic volumes in million ton.
Source: Individual Country Report Mongolia

Figure 8: Mongolia coal traffic flow forecasts in 2020, million ton

Shivee Khuren and Gashuun Sukhait are two border crossings in the west part of Inner Mongolia in China. These volumes of coal are for the Chinese domestic market and are currently transported by trucks. However transport by rail would be easily economically justifiable. In 2010 The State Great Khural (Parliament) of Mongolia has endorsed the State policy on Railway Transportation. According to the Policy approximately 5,683.5 km of main railway composition shall be newly built in Mongolia in 3 stages. The first stage (approximately 1100 km in total) is:

- Dalandzadgad –Tavan Tolgoi-Tsagaan Suvarga-Zuunbayan 400 km;
- Sainshand-Baruun Urt -350 km;
- Baruun Urt-Khuut – 140 km;
- Khuut-Choibalsan – 150 km.

In May 2012, the Government of Mongolia made a decision to build 3 sections of the new railway within 2.5 years and allowed some private contractors to start construction activities on the basis of Concession order (build, operate and transfer). These railway lines will be owned by the contractors for 24 years of operation. Afterwards the railway lines will be transferred to the Government ownership. The rail lines will have broader gauge of 1520 mm with axle load of 25 tons per axle. The first one through Gashuun Sukhait is for export to China through west Inner Mongolia. The other two sections are to connect the Gobi field coal with Sainshand on the Trans Mongolian Railway where a coke processing facility is going to be built.

The decision to build the rail connection in Eastern Mongolia to move the coal has not yet been taken. This will probably be done in two stages. First connect Sainshand with Choibalsan and secondly connect with China through Nomrog. In addition to building the railway, a paved road should be planned between Sainshand and Choibalsan.

It is estimated that the total coal demand that could be supplied by Mongolian coal would be 168 million tons in 2020. Therefore there would not be any market problems for the 15 million tons planned to be carried every year through Eastern Mongolia and the Tumen Corridor with the breakdown being: Northeast China, 10.6 million tons, ROK 2.3 million tons and Japan 2.3 million.

Extraction has started in the Gobi Desert and large volumes are already exported to China by trucks. In 2020, this will continue to be the case for mines located near the border (17 million tons forecasted to be moved from Nariin Sukhait to Shivee Khuren BCP). For the Tavan Tolgoi mines, the majority will be sent through a new railway line to Sainshand for processing (20 million tons becoming 15.5 once processed) into coking coal destined also for China. There is a current ban on coal movement on the Mongolian Railway to China and therefore it is planned to bring the coal through a 900 km rail line to the China border (Nomrog/Arxan) in East Mongolia.

China has so far offered to Mongolia 3 possible ports, Tianjin, Yingkou and Dalian. The infrastructure cost of bringing the export coal to East Mongolia is estimated to be USD 1.7 billion. By offering Tianjin Port and Erenhot indicates that Chinese authorities are prepared in medium term to increase capacity on the rail line from Erenhot and then lift the ban. If coal would be able to travel through Erenhot, there will be then no justification to build 900 km of rail to East Mongolia. Of course shipping coal through Erenhot would imply new investments in terms of capacity increases on the Mongolian and Chinese side, but such investments would be far lower than the USD 1.7 billion quoted.

Therefore, though the volume of 15 million tons of Mongolian coal entering the Tumen Corridor in Arxan is part of the analysis, there is a certain degree of uncertainty if this will happen.

IV. ROAD MAP AND ACTION PLANS

The analysis carried out by the National Consultants and the summary and highlights presented above have stressed the need for a rapid implementation of key transport projects. These projects are required in order to make the GTI Transport Corridors functioning properly and bringing substantial economic benefits to the region through a better integrated transport network system. However many of these projects are not new and have been discussed within GTI forums before. They could have been many reasons why the projects were not implemented but one of them is that there were still too many uncertainties and unresolved question before they could be considered sustainable projects which could attract investors. This fact is well acknowledged in this report and it is why all major investments proposed should be first confirmed by in depth feasibility studies.

More specifically, the proposed Road Map consists of a series of investment projects supported by policy directions with a strategy for implementation. Before going through the elaboration of the road map, a review of what could be learnt from the experience of other regional groupings is given.

IV.1. LESSONS FROM OTHER REGIONAL GROUPINGS

The “lessons learnt” focus on transport corridors from regional cooperation groupings in Asia as they are more relevant for the Greater Tumen Initiative. The only exception is the interesting experience of the Maputo Corridor in South Africa⁴⁰. The Asian regional groupings⁴¹ are: CAREC, GMS, SASEC, BIMP-EAGA and IMT-GT. All the Asian groupings have been financially supported by ADB. Lessons are summarized below in the following “windows”.

Transport Corridors should reflect existing well established and on occasion potential trade flow routes within a somewhat homogeneous boundary area.

Transport corridors are “regional cooperation grouping” (RCG) corridors and their development should bring economic growth in neighbouring countries. Therefore transport corridors should follow closely established

⁴⁰ Maputo is a major port in Mozambique serving as a gateway port for South African exports;

⁴¹ CAREC: Central Asia Regional Economic Cooperation, GMS: Greater Mekong Subregion, SASEC: South Asia Subregional Economic Cooperation, BIMP-EAGA: Brunei, Indonesia, Malaysia, Philippines East ASEAN Growth Area, IMT-GT: Indonesia, Malaysia, Thailand Growth Triangle.

trade flow routes. However, there might be some cases where important future developments (mining projects) could influence the design of the transport corridor.

A transport corridor facilitating trade for land-locked countries or region should end with a sea port where imports and exports are received. This is the case for CAREC, GMS and ASEAN corridors and it was not surprising that the transport corridors when land-locked countries are involved go beyond the boundaries of the RCG. But RCGs exist and survive because they have things in common besides trade due to history, ethnic proximity, and language... That sense of homogeneity may however disappear if RCGs opens its membership to countries less “connected” with the rest.

Transport Corridors besides being natural trade routes need to meet a series of stringent criteria.

The nine transport corridors outlined in the 2006 GMS Transport Sector Strategy were *not designed based on solidly defined criteria*. They were derived from views expressed by the respective country authorities. While some of them are natural corridors with traffic, others have little existing traffic and their connectivity objective would probably be realized only in the long run. The three most promising transport corridors, North-South, East – West and Southern were natural desire of connectivity from GMS country participants: Kunming to Bangkok, Bangkok to Vietnam through Laos (East – West corridor) and Bangkok to Vietnam through Cambodia (Southern corridor). These corridors have attracted investments; other GMS transport corridors are not performing so well.

The design of the CAREC transport corridors is interesting to note. It was the product of converging information generated by a series of steps. The first step consisted in noting the major trade directions in Central Asia. The second step was to learn from the experience of other organizations which have defined transport corridors in the past. The third step consisted in stating a few conditions for corridors to be considered: (i) routes will use only Asian Highways (AH) and Trans Asian Railway (TAR) available in the respective countries, (ii) a corridor has to pass through at least 2 CAREC countries, (iii) since corridors are transit corridors, routing should originate from an agreed “gateway” reaching a destined agreed “gateway”, (iv) for practical reasons routings should follow to the extent possible international corridors, (v) since most intra-regional and transit trade were carried by railway, railway network should be the “driving force” behind the selection process, (vi) routing selection should aim at creating a win-win situation. Finally, to be confirmed as CAREC transport corridors, they would have to pass the following criteria: a) Existing sufficient transit traffic; b) Prospect of economic and traffic growth; c) Ability to increase connectivity between regional centres; d) Prospect of mitigating delays and other hindrances such as the number of cross border points, the number of gauge changes etc...; e) economic and financial sustainability of infrastructure, f) technology improvements. All CAREC corridors were first expected to meet the criteria but this turned out to be too demanding and it was sufficient to comply with either (a) or (b) or both and at least one of the remaining three criteria.

The operating conditions of the transport infrastructures on the corridors should be regularly reviewed and proper actions taken so as to guarantee that the movement of goods and passengers can achieve an acceptable level of quality service.

Transport sector strategy studies carried out for GMS and CAREC contain reviews of the capacity and conditions of the land infrastructures (road and rail). These reviews have helped to assess the investment needs which could receive ADB support. On that matter, it is important to stress that Country Partners should carry and maintain road and rail asset inventories. To facilitate trade across borders, efficient infrastructures have to be put in place at border crossing points. Recently, ADB has conducted a series of studies to review the conditions of border crossing points (BCPs) in CAREC and SASEC. The studies were particularly useful to identify BCP investment projects which could eventually be financed under lending agreement. Since the free circulation of trucks in interstate traffic is not yet a reality, inland clearance depots (ICDs) are then often built at the border. ADB has financed the installation of ICDs in SASEC.

Regional Cooperation Groupings (RCGs) assisted by ADB followed a very structured institutional arrangement which presented advantages and disadvantages.

CAREC like GMS and BIMP-EAGA and IMT-GT follows a rather structured and heavy decision process. Investment projects and all sector matters are discussed by the respective *Working Group Committees* (WGC). The committees prepare recommendations to be further discussed by the Senior Official Meetings (SOM). Agreements and MOUs are then signed by the respective ministers usually during an annual meeting (MM). And above the MM, there is a Leader Meeting with the heads of state taking place every 3 to 5 years. The advantage of such a structure is that there is a guarantee that projects and measures getting

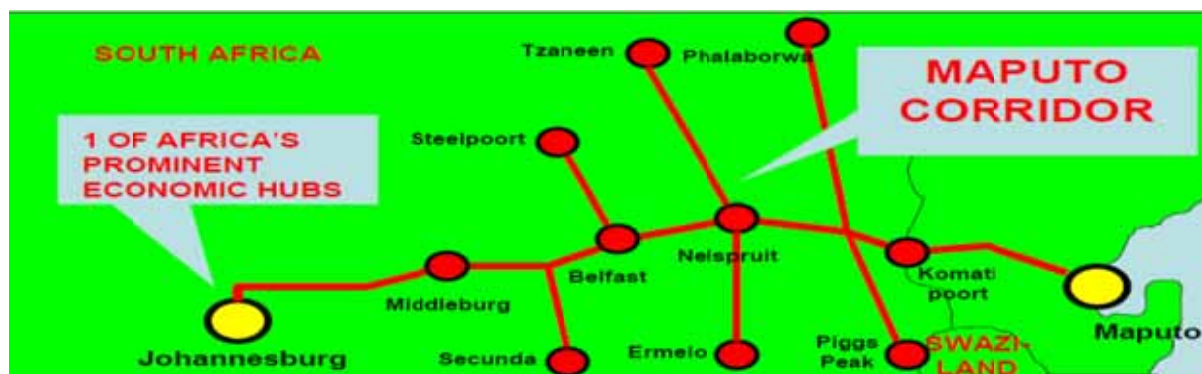
approval through the layers of decision making will have a better chance of being implemented. The disadvantage is that such a heavy process could lead to an overdose of meetings stretching thin scarce skilled staff resources and incurring heavy costs.

Trade facilitation working groups are usually dominated by Customs. There is no doubt that improving customs procedures are key elements of trade facilitation, but they are not the only ones. Trade facilitation and transport should be both developed in tandem.

RCGs have also put in place dedicated organizations to “manage” the transport corridors, but often these organizations were not effective. Maputo Corridor however could be an exception.

Managing transport corridors goes in pair with the need to put in place effective measures in trade facilitation for border crossing movements. This requires complex coordination among many ministries and organizations. Therefore ADB has been instrumental in establishing multi-agencies coordinating bodies at the national level. In GMS, it is the National Transport Facilitation Committee (NTFC). The NTFC were really an outshoot of the GMS Cross Border Trade Agreement (CBTA) and has specific responsibility like the issuance of “customs transit and temporary permit” and the negotiation on transit and interstate vehicle quotas. In CAREC, ADB recommended that all participating country partners establish a high power coordination body. This *National Joint Committee (NJC)* was gradually put in place, chaired by a senior minister. However, in almost all the cases, the NJCs have been ineffective. Meetings of the NJC are usually attended by junior government staff and decisions of the committee are not binding. Lack of coordination remains a serious issue creating misunderstandings and delays in implementation.

RCGs have on occasions tossed the idea of establishing a supra-national organization to overcome the management of transport corridors. This idea has not so far been implemented except in the case of Maputo Corridor in Africa. The Maputo Corridor is a major import and export route connecting the northeast provinces of South Africa with Maputo, the capital and main port of Mozambique. The key feature of the Maputo Corridor experience is the *Maputo Corridor Logistics Initiative (MCLI)*, a PPP organization with strong representation from users as well as from government and the endorsement by no less than 170 stakeholders. MCLI was giving the means to pursue its objective of monitoring the performance of the corridor and promoting its development.



Source: Maputo Corridor Logistics Initiative, <http://www.mcli.co.za>

Figure 9: Scheme of Maputo Corridor

A recurrent problem in all RCGs has been the delays in implanting projects that were agreed and the same projects being put on the agenda of official meetings time after time.

There are quite a few reasons to explain this. Projects were often not “mature enough” because sustainability had not been adequately demonstrated in the feasibility studies; without mentioning the fact that often feasibility studies were absent or inadequate. In other cases, projects, though agreed by country delegates in official regional forums, were not on the priority list of the respective governments implying that financing was not available either through national budget or through international development partners.

One of the most interesting features in terms of corridor monitoring was, without any doubt, the creation of the *Corridor Performance Monitoring Measure (CPMM)* in CAREC.

Following the recommendation of the 2008 *Transport and Trade Facilitation Strategy (TTFS)* and its Action Plan, transport efficiency along the six CAREC corridors were measured and monitored periodically.

CAREC refined the Time/Cost Distance (TCD) methodology of UNESCAP to establish the CAREC Corridor Performance Measurement and Monitoring (CPMM) project, which began in early 2009. CPMM collects, on a monthly basis, information on time and costs along the six CAREC transport corridors. The collection is realized by transport associations. Information is filled by drivers at fixed BCP locations. The CPMM system has so far not been adopted in other RCGs.

In spite of the institutional support common in most RCGs, it has been noted that investments projects and policies recommended by technical assistance studies had in quite a few occasions suffered from a lack of ownership from government authorities.

If there is no ownership or only mild government support, the projects cannot be a success and there is then a high risk of money wastage.

Some Regional Cooperation Groupings, to facilitate trade and cross border movements, have signed a comprehensive cross border transport agreement (CBTA). The movement of goods and passengers in transit or in inter-state should be favoured and properly regulated even in the absence of a CBTA.

Regulating transit and inter-state transport is one of the key elements to support the development of transport corridors. Often RCG country partners operate under different trade regimes: full free trade agreement, limited free trade agreement, MFN customs duty agreement... Also countries may have different transport regulations and restrictions on trucking operations (axle load restrictions, vehicle size, vehicle inspections...). Therefore, a standardized and comprehensive agreement regulating transit and inter-state transport was felt to be a necessity by some RCGs. A comprehensive cross border agreement that became the CBTA was developed and endorsed by GMS country partners. The road to ratification and implementing the CBTA was not an easy one. CAREC has also decided to adopt CBTA and has made some steps to implement it. There is no doubt that there are some clear advantages to have a comprehensive document covering transit and inter-state transport movements. However, the benefits need to be clearly accounted against the costs in delays and complexities associated with the implementation of such agreement. Even without a CBTA, trade among states belonging to a common regional grouping should allow transit and free passage of goods and persons.

Harmonized, transparent and efficient customs procedures were found essential to facilitate trade among country partners. Full use of electronic capability and data sharing is the way to make this process easier.

Improving customs procedures inspired by the guidance of the WCO is common practice among all RCGs. One of the relatively recent measures has been the promotion and implementation of the electronic *Single Window system (SW)*. This should not be confused with the "*single window inspection*". Under the electronic National Single Window (NSW), exporters and importers send electronically to Customs in advance their application. They also get electronically all the necessary permits to imports or exports. The different agencies involved share information and issue permits electronically. In CAREC, NSW is being implemented in Kyrgyzstan, Mongolia and Tajikistan. Full implementation of SW will take time as agencies need to go to severe business restructuring process.

One of the major advantages of selecting properly transport corridors was that it allowed for identification of corridor infrastructure improvements which could eventually be financed by ADB or other international financing organizations.

From 1992 to 2008, 79% of the ADB lending in the transport sector in GMS countries was through the GMS programme, meaning along the designated transport corridors. The transport sector in GMS programming accounts for a total of 90%. And starting from 2009, in CAREC, all ADB supported investments are exclusively on the designated transport corridors. Therefore in RCGs, transport corridors have helped organizations like ADB to be more focused in their intervention and have provided a reliable channel for financially supported infrastructure investment projects.

Improving transport corridors has brought significant economic impact contributing to economic development of the concerned areas.

Evidence of positive economic impacts of corridor infrastructure improvements is numerous and has been reported in a series of studies and research papers. A few examples can be quoted here:

- In GMS, on the East-West Corridor, improvements in road conditions brought a reduction of 16% of VOC with transit time reduced by 25% on average; Average number of vehicles per day crossing the Laos/Vietnam border was 90 before road improvement and is now 200 (2009); Australian company mining and smelting copper claims that they went ahead with their Laos project because of the new bridge and the road improvement on EWEC;
- On the Maputo corridor, in Africa, rail and road traffic was respectively 2 and 2.25 million ton in 2007 and relatively stagnant until 2005, after the establishment of MCLI it has been growing at 10-11% per annum. Maputo port had an average throughput of 9 million ton but is expected to reach 48 million ton before 2015.

Transport corridors under certain circumstances have the capacity to become economic corridors and in that aspect, the private sector had played an increasing role. However financing of investment projects in private/public partnership is still limited.

There has been a lot of speculation on the concept of economic corridors. Simply put economic corridors could be defined as *a geographical area where commercial activities are concentrated*. It has been said that transport corridors could expect to become economic corridors only once logistic industries are operating along the corridor. This idea of sequencing (transport corridor, logistic corridor and then economic corridor) has been challenged. In the case of Maputo, there was a clear sense of synergies and the expansion of economic activities took place at the same time than transport corridor improvements.

In GMS, for instance, the key transport corridors (East-West, Southern and North-South) became immediately active economic corridors. On the East-West and Southern corridor, free industrial economic zones quickly emerged between Laos and Vietnam and between Cambodia and Vietnam.

Not all transport corridors would become successful economic corridors. Some basic economic fundamentals must exist like market advantages, good location, primary resources and low wages... Above all, economic corridors need to be driven by an active private sector. In all RCGs, the role of the private sector has been "institutionalized" through either dedicated working groups or committees, special business councils (BIMP-EAGA and IMT-GT). These institutions have been very active pushing for reform and alerting country representatives in the respective RCGs of the problems and weaknesses of transport corridors. In addition, in some cases like in BIMP-EAGA and IMT-GT, *investment forums* have been organized with the active participation of the private sector. These forums have served as a channel to invite international financing and bilateral organizations to support infrastructure PPP projects. Despite the above, private sector financing of transport projects has been limited in Asia. But this was not true in Africa where the development of the Maputo corridor was largely due to private sector intervention for roads (toll highways) and privately operated railways.

The different points mentioned above should all be of interest for GTI. Summarizing the message, four principles could be retained when dealing with transport corridor development in regional cooperation groupings (RCGs). First, allow for *flexibility*. Often transport corridors origin from a road, a rail or a shipping route and there is merit to focus investments in that chosen route to increase trade. But flexibility is required as the movements of goods and persons and the following economic development would probably take place within quite a wide band and not only on a corridor defined by a road/rail or even shipping route. Flexibility also means that corridor development is a dynamic situation where new corridors would likely emerged. Second, all projects proposed must be easily *implementable*. This means that they are at the proper level of maturity where all the studies to justify them economically and environmentally have been successfully conducted including a programme of consultation with stakeholders. But above all it means that financing is available. Third, *involving the participation of the private sector* as much as possible would increase the chances of success of any project whether the private sector is a financier or simply a user of the transport infrastructure. Fourth, putting in place efficient infrastructures along the corridor would not bring the expected benefits if *procedures at the border crossing* remain a constraint. Mechanisms to monitor progress, time and cost savings along corridors are required.

IV.2. THE ROAD MAP: THE INVESTMENT PROGRAMME

The first component of the Road Map is the Investment Programme. The investment programme lists the key projects which have been identified above through the review of the GTI Transport Corridors. Certain projects however would not appear in the list. This is the case of the vast investment programme required to modernize the transport network in DPRK and fully reconnect with ROK. This report fully supports all the initiatives proposed and does not doubt that given the proper circumstances they could be economically justifiable. However DPRK is not a member of GTI and all the proposed projects integrating the ROK transport network with DPRK remain only wishes until the political situation in DPRK changes. The only

exception to this is the development of Rajin Port within the Tumen Corridor because it involves China and Russia as well.

The Individual Country reports have identified many more projects than the ones listed here. Many of these infrastructure projects are along the GTI Corridors but are “national projects” in the sense that their prime objective is to eliminate congestion of domestic traffic. It is only when they have a clear regional dimension that projects qualify to be included in the list.

None of the projects proposed and listed below is yet at the level of maturity to receive immediate implementation should financing be available. This explains a series of feasibility studies has been recommended. It is true that feasibility studies will delay the realization of projects which could be seen as urgently needed but such studies will also prevent funds being wasted on over design projects.

The table below lists the proposed projects by corridors with estimated costs, implementing agency, time frame and a rationale. Costs have to be understood as “rough orders of magnitude”. Some of the costs are drawn from Individual Country reports others are inspired from similar projects in Asia and would need to be confirmed before the rule of plus or minus 20% could be applied. Costs for feasibility studies and detailed design have however a higher degree of reliability.

Table 8: Investment Programme

Project Title	Cost (USD million)	Implementing Agency	Time Frame (years)	Rationale
Tumen Corridor				
Mongolia				
Feasibility Study for 300 km Khuut – Nomrog Rail track	1.2	Railway Department, Ministry of Roads and Transport	2013	To provide a suitable route For the export of coal coke From Sainshand coke facility Mostly to Japan & ROK
Detailed Design & supervision of rail project	2.0		2014	
Construction of rail track	900.0		2015-2016	
Feasibility Study for 384 km of Choibalsan Nomrog road	0.6	Road Department, Ministry of Roads and Transport	2013	Complete road network In East Mongolia and Connect with China by road
Detailed Design & supervision of road project	2.0		2014	
Construction of road project	576.0		2014-2015	
BCPs road and rail	2.0		2015	
Subtotal Mongolia	1,486.8			
China				
Feasibility Study and Detailed Design of Transshipment Yard & BCP at Arxan	1.5	Ministries of Railways & Transport; Provincial authorities	2013	To connect with new Mongolia railway and Provide infrastructure Support to Mongolian coal exports
Strengthening and rehabilitation of rail Track to accommodate Mongolian coal	200.0		2014-2015	
Construction of Transshipment yard And BCP at Arxan	50.0		2015-2016	
Development Study of Hunchun area	1.5	Ministry of Transport, Ministry of Railways, Provincial & Local admin. Private sector	2013	To support development Of Hunchun as rail and road Hub with private Logistic Centres (one specialized In marine products)
Hunchun-Kamyshovaya rail interchange Loading station	40.0		2014	
Construction of Logistic Centres At Hunchun (3 private sector centres, One cold storage -1 st phase only)	80.0		2013- 2015	
Subtotal China	343.0			
Russia				
Feasibility Study and Detailed Design of Zarubino Port and connection to NEA China through A fast corridor & easy procedures	2.5	Primorsky Administration, Ministry of Transport	2013	The corridor constituted by Zarubino Port and the new Rail/road connection will Allow container movements Between Northeast China And ROK and Japan
Reconstruct Hunchun-Makhalino-Zarubino rail line with BCP	250.0	Russian Railways (RZhD), Ministry of Transport	2014-2015	
Develop Zarubino Port with container Terminal	400.0	Ministry Transport, Primorsky Administration, Private sector	2014-2015	
Subtotal Russia	652.5			

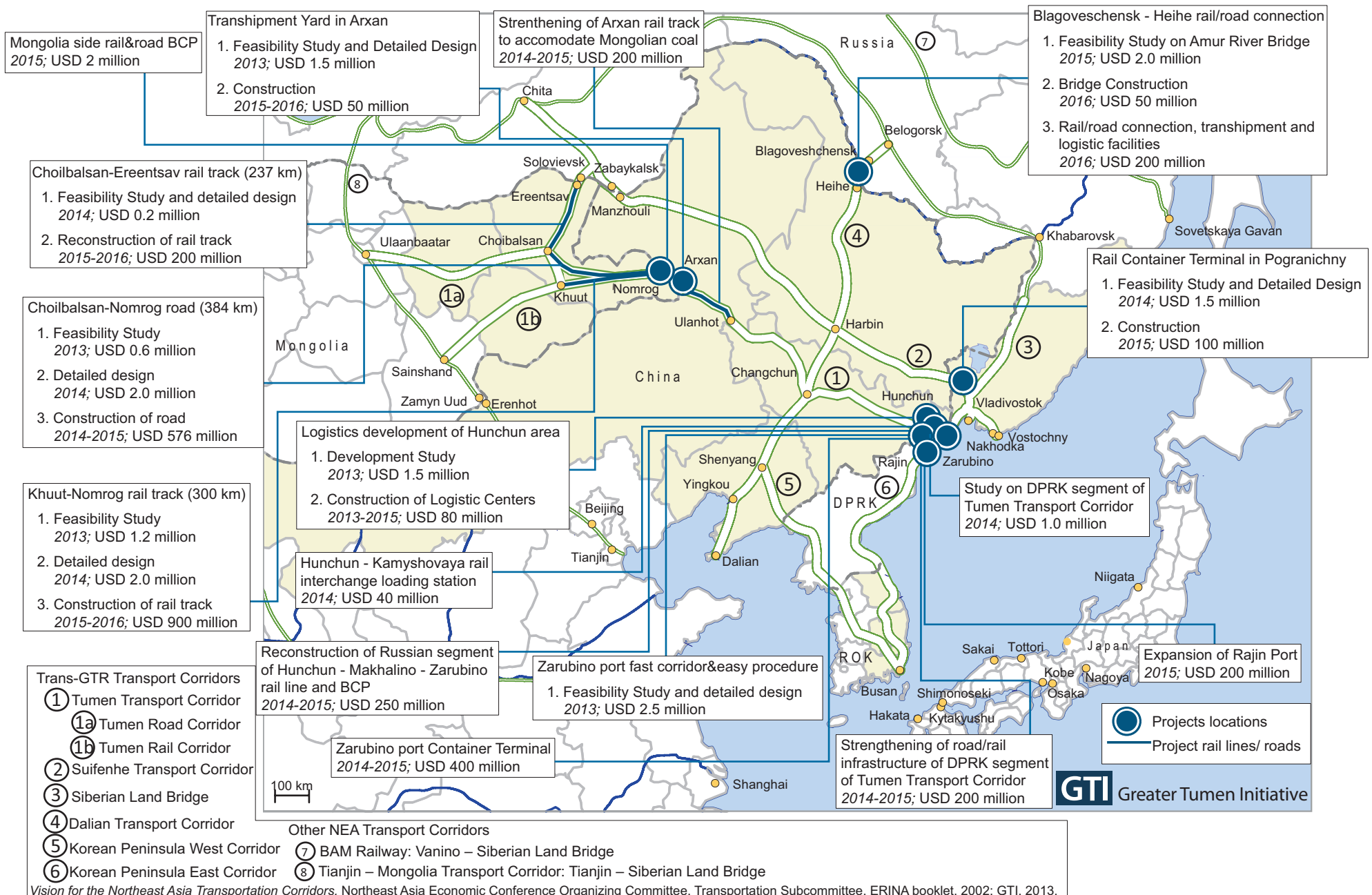


Figure 10: Suggested Investment Projects 2013-2016.

Project Title	Cost (USD million)	Implementing Agency	Time Frame (years)	Rationale
Total Tumen Corridor	2,482.3			
Suifenhe Corridor				
Mongolia				
Feasibility Study and Detailed Design of rehabilitation Of Choibalsan-Ereentsav rail track	0.2	Railway Department, Ministry of Roads and Transport	2014	Track needs rehabilitation To allow export of minerals (coal and other) to/through Russia
Reconstruction of rail track between Choibalsan-Ereentsav	200.0		2015-2016	
Subtotal Mongolia	200.2			
Russia				
Feasibility study and Detailed Design of rail container Terminal at Pogranichny	1.5	Russian Railways (RZhD), Ministry of Transport, Primorsky	2014	Container terminal needed Because of increase in Container traffic on the line
Construction of rail container terminal At Pogranichny	100.0		2015	
Subtotal Russia	101.5			
Total Suifenhe Corridor	301.7			
Dalian Corridor				
China - Russia				
Feasibility Study of China-Russia bridge between Blagoveshchensk and Heihe	2.0	Russian Railways (RZhD), Ministry of Transport; China Ministry of Transport	2015	Building bridge on Amur River needed to improve Trade and connectivity Between China and Russia
Rail/road bridge on Amur River	50.0		2016	
Rail/road connection with transshipment And logistic facilities provision	200.0		2016	
Total: Dalian Corridor	252.0			
Korea Peninsula East Corridor				
Study of development of Tumen Corridor With DPRK	1.0	Joint authority DPRK, ROK, China and Russia	2014	Rason-Rajin development Is also along Tumen Corridor; transport network Development requires multi Countries joint effort
Expansion of Rajin Port	200.0		2015	
Strengthening of road/rail infrastructure In DPRK Tumen Corridor	200.0		2014-2015	
Total Korea Peninsula East Corridor	401.0			
Grand Total	3,437.0			

The total estimated cost for the investment programme proposed above is USD 3.45 billion. This is a considerable sum of financing required on a relatively short period, from 2013 to 2016. The proposed time frame is the desired one and would probably suffer from delays of implementation.

Tumen and Suifenhe are the two priority corridors. The Suifenhe Corridor functions properly and therefore it is not surprising that infrastructure investments are limited accounting for USD 300 million and consisting in rehabilitation of the Choibalsan-Ereentsav (Mongolia) rail track and the building of a container yard at Pogranichny.

The investment required on the Tumen Corridor is sizeable totalling USD 2.5 billion. The Tumen Corridor currently does not function as a regional corridor with little trade and transit only passing through the Kraskino BCP. It should be recalled that there are two reasons which justifies the development of the Tumen Corridor as a truly functioning regional corridor. The first one is to provide a route for the export of the coal (coke) originating from mines in the Gobi desert in Mongolia, processed at Sainshand and send to China through a new railway network to be built in East Mongolia. This turns out to be very expensive firstly in Mongolia (USD 1.5 billion) and then in China to accommodate such traffic in their present railway system (USD 250 million). The second reason is to provide a more direct and cheaper route for the trade between Northeast China (in this case mostly Jilin Province) and ROK and Japanese goods. This route means transiting goods through Zarubino Port in the Primorsky Territory. To realize this implies that the whole corridor between Zarubino and Hunchun in China becomes a “fast corridor with minimum harassment”. Removing the infrastructure constraints consist in building a container port⁴², rehabilitating the rail line (dual

⁴² It is envisaged that the development of Zarubino Port should be done in stages. The first stage should be to first build one dedicated container berth of 200 to 250 m with 2 Gantry cranes but do the piling and all the preparation for expansion if traffic materializes as expected.

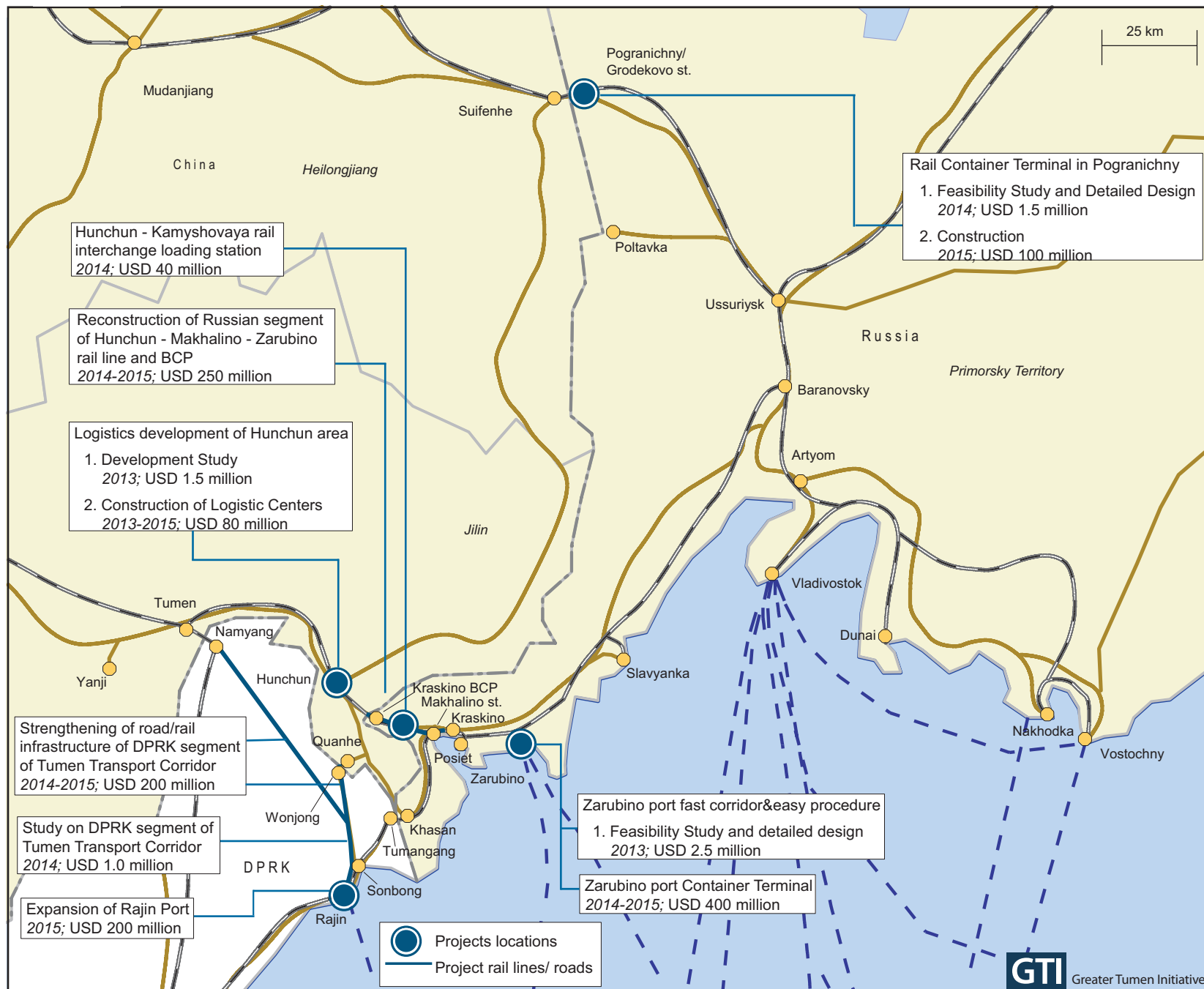


Figure 11: Projects suggested for Hunchun – Rajin – Zarubino area.

gauge), improving BCP facilities and supporting the construction of a series of private logistic centres in Hunchun⁴³. However traffic will be mostly transit containers and the corridor will be a success only if Customs changes its attitude and provides easy passage (not breaking seals for instance). The overall cost of providing an efficient corridor between Hunchun and Zarubino is estimated to be USD 954 million.

Investments are also proposed on two other non-priority corridors, the Dalian and Korea Peninsula East Corridor. Investments on the Dalian Corridor total USD 252 million and consist simply in eliminating a missing infrastructure link by building a bridge on the Amur River between Blagoveshchensk (Russia) and Heihe (China) and providing the necessary rail infrastructure to connect the Chinese railway system with the Trans-Siberian Railway. Significant economic benefits would be expected for Russia and China with the increase in trade and transit and the movement of people across the border.

The last series of investments concerned the support to the Rason area which has received assistance from China, Russia and ROK. Total investments proposed amount to USD 400 million and consist of expansion of Rajin Port and completion of a series of transport infrastructure (road and rail) which have not been completed. One interesting characteristic of the project is that it is in fact an extension of the Tumen Corridor in DPRK crossing with the Korea Peninsula East Corridor allowing both Northeast China provinces and Primorsky Territory of Russia to access Rajin Port and the Rason economic zone.

The total investments of USD 3.45 billion could be broken down⁴⁴ by countries giving: Mongolia USD 1,789 million, China USD 569 million, Russia USD 879 million, ROK USD 100 million and DPRK USD 100 million. However investments in logistic centres would likely all be realized by the private sector.

The investments presented would materialize only when policy directions and recommendations given in the next section are fully endorsed by all parties and implemented with constraints either eliminated or greatly reduced.

IV.3. THE ROAD MAP: THE STRATEGY

Background

The objective of the study have been defined as follows: "GTI Transport Corridor Study aims at fostering development of a reliable, cost-effective and efficient integrated transport network in the GTR through planning and facilitating the activation and development of international transport corridors in the region". The focus was then in developing international (understand trans-GTR and beyond) transport corridors which function properly and are closely integrated with priority given to the Tumen and Suifenhe Corridors.

The situation on the transport corridors has been reviewed in previous sections, prospects have been discussed and constraints identified. A few conclusions came out clearly from the analysis. There is very little transit traffic with trade volume being only significant on the Suifenhe Corridor. Some corridors function only as domestic transport corridors and the corridors through DPRK are not yet functioning because of the political situation. Physical and non-physical constraints are serious and they affect traffic volume and trade along the corridors. Therefore GTI needs a Strategy to eliminate the constraints and turn the non-functioning corridors into vibrant transit and trade routes.

Policy Direction 1: Connectivity

*In order to achieve economic growth and sustainable development throughout the GTR, GTI member countries need to increase **connectivity** among each other in a spirit of ensuring "win-win" situations for all.*

Better transport connectivity between countries increase trade. Larger volumes of trade bring economic growth, overall wealth benefits and poverty reductions. For GTI, this translates in terms of specific recommendations. Improving connectivity implies opening and maintaining a network of effective border crossing points. This applies to connectivity between China and Russia Far East, China and DPRK, Russia and DPRK and ROK and DPRK. There is room for improvement here. The obvious case of improvement is between ROK and DPRK with the matter covered in the present report and extensive treatment in the ROK National Consultant Report. Also there are connectivity problems that have been illustrated between China, Russia and DPRK (missing bridges and road and rail connections across the Tumen River). There are in fact few effective BCPs between China and Russia along a long border which translates, for instance, into missing bridge on the Amur River between Heihe and Blagoveshchensk and in Khabarovsk. Though

⁴³ There are currently three projects: 1) Hunchun-Pohang Modern International Park (150 ha, financed by ROK, 1st phase cost USD 39 million), 2) Northeast Asia International Border Trade Logistic Collection and Distribution Centre (36 ha, 1st phase USD 21 million), 3) Aquatic and Cold Chain Logistic Centre (2.8 ha, USD 17 million);

⁴⁴ For Dalian investments, cost has been split 50/50 between China and Russia, For the Korea Peninsula East Corridor investments, cost was shared equally between China, Russia, ROK and DPRK.

improve connectivity brings welfare gains for all parties, this has to be carried out in a spirit which guarantees a “win-win” situation for all and respect national sensitivities.

Policy Direction 2: Support to Transport Infrastructure Improvements

Increasing Connectivity means that efficient and effective transport and trade facilitation infrastructures have to be put in place along transport corridors to provide for a seamless movement of people and goods across borders.

This is a broad encompassing policy direction which constitutes the legal framework for the investment projects identified and listed in the previous sections. Transport and Trade Facilitation infrastructure improvements are of the following types:

- Connecting roads to border points along the transport corridors
- Connecting railway lines (standard, broad or dual gauge) to border points along transport corridors
- Construction or modernization of BCPs (Border Crossing Points)
- Infrastructures to facilitate customs clearance and logistics of the movements of goods within the country (Inland Container Depot, Rail Container Yard, Logistic Centre)
- Adequate port infrastructures to support development of the transport corridors.

After conducting feasibility studies and ensuring financing transport infrastructure projects along the corridors should be implemented.

Policy Direction 3: Software Support to Transport Corridor Functioning

Transport Corridors to function properly need, in addition to good infrastructures, to be supported by a series of effective border crossing regulations and procedures covered in part through inter-states agreements.

This is again a broad and encompassing policy direction which needs to be seen as a complement to Policy Direction 2 above. The regulation and procedures aspect concern more the question of improvements in customs performance. This covers customs harmonization, inspection and use of risk management, official and unofficial customs charges, customs officer attitudes and the slow implementation of an electronic Single Window system. Problems with Customs are quoted as the main constraint to trade by most. The lack of international agreements on transit and inter-state transportation makes situation worse and this needs to be resolved in order to insure a seamless passage of goods through borders.

Policy Direction 4: Management of Transport Corridors

Putting a strong management structure is the key for ensuring success in the development of the transport corridors. The management structure recommended here has three layers. The upper layer consists in having national/regional organizations coordinating activities along corridors; the second layer consists in managing sub-corridors to ensure project implementation, with the third level consisting of management tools for monitoring the performance of transport corridors.

The first layer consists in recommending the establishment of a coordinating organization at the defined regional level.⁴⁵ which will oversee transport and trade facilitation issues and projects in an integrated fashion. This is to reduce the confusion associated with ministries and organizations acting in isolation. The second layer is inspired from the experience of Maputo in South Africa. It consists in creating an organization with private and public participation to take responsibility for the overall management of sub-corridors where many development projects are being implemented. The best example here is the Hunchun-Zarubino sub-corridor. This organization does not need necessarily to be involved in running operations as the railways and the port for instance may be under different private (or not) operators. The organization should act more as a strong lobby, oversee the performance of the sub-corridor, and do marketing, resolve problems and conflicts and plan future developments. All stakeholders (from the two countries) should be member of the board of directors. Probably this means involving the Chinese logistics private operators of Hunchun as well as the port and rail operator. The third layer is the proposed annual reporting of the performance of the transport corridors through annual reports using commonly agreed monitoring indicators.

⁴⁵ The defined regional level would be for instance, the four provinces of Northeast China, the concerned territories of Far East Russia, the East Mongolia provinces, the relevant provinces of ROK (and eventually DPRK and West Coast Japan).

Policy Direction 5: Private Sector Involvement

It is recommended to involve the private sector as much as possible in all aspects of development of the transport corridors: project identification and planning, financing, operation, monitoring...

It is recommended that concerned governments and regional organizations provide an environment favourable for private sector participation in the development and running of transport infrastructures and services. This private-sector participation (PPP) in projects has been widely recognized as one way of compensating for budget constraints and increasingly expensive transport infrastructure investments.

IV.4. THE ROAD MAP: THE MEDIUM TERM ACTION PLAN

In the pages below the Medium Term Action Plan for the Greater Tumen Region is presented.

Table 9: GTI Medium Term Transport Action Plans and Results Framework

Overall Goal: "Fostering the development of an integrated regional transport system and increase cargo and passenger flows in Northeast Asia by facilitating activation of transport corridors and thereby provided land locked Mongolia and Northeast China with access to Pacific ports"

Policy thrusts	Objectives	Investments/Activities	Cost (USD million)	Time Frame	Expected Outputs
<u>Policy Direction 1: Connectivity</u> "In order to increase economic growth through trade and reduce poverty, GTI participating countries need to increase connectivity among each other in a spirit of ensuring "win-win" situations for all".	Increase Connectivity in GTR either through extending existing corridors or creating new ones	– Construct missing bridges and connecting rail line between China and Russia: 1) Heihe-Blagoveshchensk 2) Tongjiang-Nizhneleninskoye	1) USD 250 including access 2) USD 300 including access	1) 2016 2) 2016	In both cases, establishing new connections would bring additional trade and contribute to economic growth in Heilongjiang and in Amurskaya Oblast and Khabarovsk Territory
<u>Policy Direction 2 : Infrastructure Improvements</u> "Increasing Connectivity means that efficient and effective transport and trade facilitation infrastructures have to be put in place along transport corridors to provide for a seamless movement of persons and goods across borders. "	Transport projects all face uncertainty and risk; then to ensure justification and sustainability to improve operationality of corridors, further studies are needed Supporting the development of transport infrastructures on key corridor: Tumen Corridor	– Major investments along the corridors require feasibility studies (FS) and sometimes detailed design (DD) before implementation – Rail and road connection in Eastern Mongolia to bring Gobi coal to NEA markets – IMAR rail improvement for Mongolian coal and Arxan BCP – Transport and logistics infrastructure at Hunchun – Hunchun – Kamyshevaya loading station	Tumen corridor FS & DD: USD 11.3 Suifenhe corridor: FS & DD: USD 1.7 Dalian corridor: FS & DD: USD 2.0 ROK East corridor: FS: USD 1.0 Rail: USD 900; Road: USD 576; BCP: USD 2.0 Rail rehabilitation: USD 200 BCP&yard: USD 50 Logistics centres USD 80 USD 40	2013-2014 2014 2015 2014 2015-2016 2014-2016 2013-2015 2014	Feasibility studies would confirm economic and financial viability of projects; detailed design would help optimizing project functionality and capacity Tumen Corridor does not function as a regional and transit corridor. Investments put in place would permit high volume of trade and transit between land locked Jilin Province and ROK and Japan through Zarubino Port, bringing substantial economic benefits to Jilin and Primorsky Territory. Tumen Corridor would also permit Mongolian coal to reach

Policy thrusts	Objectives	Investments/Activities	Cost (USD million)	Time Frame	Expected Outputs
		– Reconstruction of Hunchun-Makhalino rail line with BCP	USD 250	2014-2015	export markets of Northeast China, Japan and ROK
		– Expansion (container berths) of Zarubino Port	Up to 0.5 M TEU USD 400	2014-2015	
	Supporting the development of transport infrastructures on key corridor: Suifenhe Corridor	– Reconstruction of rail track Choibalsan – Ereentsav	USD 200	2015-2016	Mongolian rail rehab with Russia at Ereentsav would lead to increase in trade. Facility at Pogranichny will support expansion of rail traffic
		– Construction of rail container yard at Pogranichny (Russia)	USD 100	2015	
	As part of Tumen and East Korean corridor, support connection of China and Russia with Rajin Port and Rason through DPRK	– Expansion of Rajin Port – Completion of road/rail from Tumen/Hunchun to Rajin – Completion of rail track between Khasan & Rajin	USD 200	2015	Increase trade between DPRK and China and Russia would contribute to economic growth and alleviation of poverty
			USD 200 for Tumen–Rajin and Khasan–Rajin	2014-2015	
<u>Policy Direction 3: Software Support</u> Transport Corridors to function properly need, in addition to good infrastructures, to be supported by a series of effective border crossing regulations and procedures covered in part through inter states agreements.	Improve drastically BCP crossing procedures especially between China and Russia	– Harmonization and simplification of customs procedures according to WCO – Increase hours of opening of BCP – Push for adoption of Single Window (electronic) and single inspection – Recognize seals from other GTR countries – Agree on vehicle standards and insurance policies	No specific costs as these are not GTI but National costs	2013-2016	All the proposed changes will increase economic growth and trade and benefit all parties. However these changes are decided at national level and therefore will take time before being fully realized.
	Develop fully operational inter-state transport and transit agreements signed by all GTI country partners	– Expedite the signing of the agreement of “Transport Facilitation Agreement of Shanghai Cooperation Organization” (SCO) with UNESCAP and ADB support to facilitate transit of goods and passengers and across borders vehicle movements	No specific costs as these are not GTI but National costs	2013	Legal texts have been already floating for long. It requires now political will to fully sign and ratify interstate transport and transit agreements and then agree on a fast track for implementation.
<u>Policy Direction 4: Management</u>	The first dimension consists	Each country province or district	No specific costs as	2013-2014	GTI could be instrumental in

Policy thrusts	Objectives	Investments/Activities	Cost (USD million)	Time Frame	Expected Outputs
<u>of Corridors</u> Putting a strong management structure is the key for ensuring success in the development of the transport corridors. This means putting in place specific and sometimes customized institutional structures under three dimensions	in having national or inter provincial organizations coordinating activities along corridors (Joint Transport and Trade Facilitation Committee JTTFC)	should create such committee with representations from MOT, Customs, Trade Ministry and Rail, Road and Port operators to review problems at BCPs.	these are not GTI but National costs		pushing respective official organizations to set up these coordination committees
	The second dimension consists in creating a special multi-countries body which will overlook the functioning of sub-corridors to ensure project implementation and corridor operationality	Inspired by the Maputo Corridor organization in South Africa, the China-Russia organization should first be tried on the Hunchun – Zarubino sub corridor organization (HZCO or Hunzaco) with strong public/private participation	Starting cost could be USD 0.5 million or less; cost would after sometimes cover through private sector contribution	2014	The Hunchun-Zarubino overlooking organization should be operational in 2014. One of its first task would be to negotiate ad hoc privileged customs treatment for transit goods at Kraskino. It is thought that such organization would be responsible to ensure that forecasted transit trade becomes a reality in the sub corridor
	The third dimension consists in controlling the performance of transport corridors through a series of mutually agreed indicators;	Monthly surveys should be conducted among freight forwarders to record average time and costs of travelling along corridors and crossing borders	Minimal cost of USD 0.1 million per year	2014 & more	Monitoring performance of the corridor would help traders and investors to adapt to market changes
<u>Policy Direction 5: Private Sector Participation</u> It is recommended to involve the private sector as much as possible in all aspects of development of the transport corridors: project identification and planning, financing, operation, monitoring, etc.	There are two main reasons to have greater private sector participation: 1) private operators would be more capable of turning the opportunity into a success with government support; 2) private sector should participate in the financing of proposed transport infrastructure which are expensive	1) The Hunchun – Zarubino sub corridor would have more chance of success if it comes under the umbrella operation of a private investor including port operations, railway operations and even logistic centres; 2) A few infrastructure projects could be given to private sector as BOT or BOOT like the provision of rail container yard, tolled bridges, etc	Share of capital cost from listed investments above; Overall share of private sector increasing over time	2014 & more	Private sector involvement would guarantee greater efficiency and would lessen the financial burden of government organizations.

IV.5. THE ROAD MAP: IMPLEMENTATION

The Medium Term Action Plan recommends an investment of USD 3.5 billion to meet the objectives of GTI and turns the key transport corridors of GTR into well-functioning trade and transit routes and contributes to improve the access to foreign markets to landlocked Mongolia and Northeast China provinces. This represents a large sum of money which is going to be required over a relatively short period of time (4 years) and it is therefore imperative that GTI prepares a clear agenda and schedule to market the study and attract the necessary funds. To help defining that agenda, a series of steps have to be taken.

Step one:

The present document is a Regional Summary of the Transport Study and should be submitted to the GTI Transport Board for adoption. The Summary originates from the findings of the different National Reports. The National Reports represent valuable efforts by the National Consultants and their reports should also be submitted to the Transport Board.

Step two:

Once the conclusions and recommendations of the Transport Study have been adopted by the Transport Board, GTI should organize a series of workshops. The workshops should be conducted at a few strategic locations in GTR such as Hunchun in China, Vladivostok in Russia and Sokcho in ROK. The workshops are the occasions to present the findings of the study, get feedbacks and likely to make some appropriate changes to the projects that have been presented. Representatives from concerned stakeholders should attend the workshops with a good balance between public and private sector attendees. The international organizations like The World Bank, ADB and UNESCAP should be invited. The Transport Study, in full or in an abridged form, should be circulated among the international organizations.

Step three:

The third step consists in deepening the marketing effort. Increasing marketing efforts are necessary in order to find funding to finance the series of feasibility studies which have been recommended in the Transport Study. These feasibility studies are required in order to confirm the economic and financial viability of the projects proposed, shed light on project alternatives and clarify questions which are still pending. Public institutions and private investors would only commit financing based on such studies though they would be prepared to express interest even before completion of the studies. To get funding international organizations and bilateral donors should be approached. In fact the best solution would be for GTI to organize a donors' conference.

Step four:

Problems and delays in crossing border points along the corridors are well known. Smooth operations along the corridors mean elimination or great reductions of delays and obstacles at BCPs. Improving Customs procedures would be decided at the national level and would progress along national priorities. GTI should make representation to the concerned governments and convince them that without significant progress not much would change along the corridors. This goes beyond purely Customs reforms as a signing and ratification of an interstate and transit agreements are also conditions for sustained success. Drafts of agreements have been circulated but no final text has yet been agreed among all concerned parties.

Step five:

The Tumen Corridor remains the first priority corridor and along that corridor, the sub corridor Hunchun – Zarubino should be the one receiving first attention. GTI should then be instrumental in setting up the organization to overlook the development of the sub-corridor. The organization could be called HUNZACO (Hunchun Zarubino Corridor Organization). The organization should be a public-private partnership with representatives from train operator, port and logistic centres of Hunchun and Jilin Province, Hunchun and Primorsky Territory and Zarubino officials as well as Customs representatives from China and Russia. The composition of the board of directors of the organization should strike a balance between enough representation from key stakeholders and a too large board of directors making decision difficult. The organization would not be involved in operations along the corridor. But the organization should be the “champion” of the corridor looking for market opportunities, resolving potential conflicts and more importantly being very active in removing constraints. The organization should strike a deal with Chinese and Russian Customs at both

Hunchun and Kraskino to receive as a pilot project privileged treatment in terms of easy crossing of containers (no break of seal, fast passage, risk management for inspection, recognition of documents prepared by other countries, etc). The operating cost of the first year of the organization should be covered through grants from international development partners. Budget for the subsequent years should come from revenues of a special tax imposed on operators (port, railway operator and logistic centres).

There would be many other steps to carry out before all investments are realized and the corridors are said to perform in a satisfactory manner. But ideally the above steps should be completed in the next twelve to sixteen months or by the middle of 2014. At that time all feasibility should be finished or near completion.

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