GTI Greater Tumen Initiative

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# TRANSPORT CORRIDORS IN THE GREATER TUMEN REGION: FINANCING INFRASTRUCTURE DEVELOPMENT

Supported by:

# TRANS-GTR TRANSPORT CORRIDORS: FINANCING INFRASTRUCTURE DEVELOPMENT

## STUDY REPORT

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Study report on "Trans-GTR Transport Corridors: Financing Infrastructure Development" was prepared by Mr. Marcel van den Broek in accordance with the decision of the 3rd GTI Transport Board meeting (Vladivostok, Russia, 2013) and co-financed by GTI and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

The Study is implemented as a follow-up action of the "Integrated Transport Infrastructure and Cross-Border Facilitation Study for the trans-GTR Transport Corridors" and GTI Regional Transport Strategy to get more information for decision making on issues related to the financing of the large infrastructure projects recommended by both.

# Executive Summary

## Objective

The objective of this report is to present financing options for transport infrastructure development in the Greater Tumen Region, which encompasses China's three Northeast provinces and Inner Mongolia, three eastern provinces of Mongolia, the eastern ports of Republic of Korea (ROK) and the Primorsky Territory of Russia.

## Need

The finance need is estimated at around USD 3 billion for developing and improving transport infrastructure with a regional impact. The majority of the suggested investments concerns railway projects (61%) and to a lesser extent road infrastructure (21%) and port infrastructure (18%)

## Opportunity

These sectors are very well suited for private financing as illustrated by ample experiences worldwide albeit that the complexity of the necessary PPP arrangements for facilitating private financing is not to be underestimated in view of the numerous failures. In particular railway infrastructure has a high risk profile related to uncertainty on the required costs and the potential demand. Adequate preparation and a conducive environment are critical for a successful implementation of PPP.

## Challenge

However the majority (61%) of the suggested investments are located in Mongolia, which has the least conducive environment for PPP. Whereas China and Russia are considered emerging PPP markets and ROK even a developed PPP market, Mongolia is still in the nascent stage of PPP development. Also the economic and financing conditions impacting the access to and cost of capital are least attractive in Mongolia.

## Recommendations

To finance and implement the suggested investment program the following recommendations are in place:

(i) Develop bankable and affordable PPP arrangements for the respective projects based on user charges where possible;

(ii) Establish a joint GTI Financing Facility in order to provide:
   a. Long-term debt facilities
   b. Viability Gap Financing
   c. Risk-mitigating guarantees

(iii) Establish a joint GTI Program Implementation Unit in order to:
   a. Standardize proceedings and contract documentation
   b. Retain competent human resources
   c. Benefit from available experiences

**ABBREVIATIONS**

| | |
|---|---|
| ADB | Asian Development Bank |
| ALIS | Autoroute de Liaison Seine-Sarthe |
| BCP | Border Crossing Post |
| BOO | Build Operate Own |
| BOT | Build Operate Transfer |
| BTL | Build Transfer Lease |
| CLB | China Land Bridge |
| DBFM | Design Build Finance Maintain |
| DBFO | Design Build Finance Operate |
| DG TREN | Directorate General for Energy and Transport |
| DPRK | Democratic People's Republic of Korea |
| DTC | Dalian Transport Corridor |
| EC | European Commission |
| EIB | European Investment Bank |
| EIU | Economist Intelligence Unit |
| EPEC | European PPP Expertise Centre |
| ERDF | European Regional Development Fund |
| EU | European Union |
| EUR | refers to E |
| FI | financial institution |
| GDP | Gross Domestic Product |
| GF | Galaxy Fund |
| GIZ | Deutsche Gesellschaft für Internationale Zusammenarbeit |
| GTI | Greater Tumen Initiative |
| GTIF | Greater Tumen Infrastructure Fund |
| GTPIU | GTI Program Implementation Unit |
| GTR | Greater Tumen Region |
| ICD | Inland Container Depot |
| IFI | International Finance Institution |
| KEC | Korean Peninsula East Corridor |
| KTZ | Kazakhstan Railways |
| KWC | Korean Peninsula West Corridor |
| LGTT | Loan Guarantee Instrument for Trans-European Transport Network Projects |
| LIBOR | London Interbank Offer Rate |
| MOSF | Ministry of Strategy and Finance |
| MON | Mongolia |
| MRG | minimum-revenue guarantees |
| MTC | Ministry of Transport and Communications |
| NEA | Northeast Asia |
| NHDP | National Highway Development Programme |
| NHIA | National Highways Authority of India |
| PIDA PAP | Programme for Infrastructure Development Africa Priority Action Plan |
| PIMAC | Private Infrastructure Investment Management Centre |

| | |
|---|---|
| PPP | Public Private Partnership |
| PPI Act | Private Participation in Infrastructure Act |
| PPI | Private Participation in Infrastructure |
| PRC | People's Republic of China |
| RCF | Risk Capital Facility |
| RF | Russian Federation |
| ROK | Republic of Korea |
| Rs | Indian Rupees |
| RZD | Russian Railways |
| SFF | Structured Finance Facility |
| SLB | Siberian Land Bridge |
| SME | Small and Medium sized Enterprises |
| SOE | State Owned Enterprise |
| STC | Suifenhe Transport Corridor |
| TCX | The Currency Exchange Fund |
| TEN-T | Trans-European Network Transport |
| TSR | Trans-Siberian Railways |
| TTC | Tumen Transport Corridor |
| UBTZ | Ulaanbaatar Railways |
| UNDP | United Nations Development Programme |
| US | United States (of America) |
| USD | United States Dollar |
| VFM | Value for Money |
| VGF | Viability Gap Financing |

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# 1 Introduction

## 1.1 Background

The Greater Tumen Initiative (GTI) (originally known as the Tumen River Area Development Programme), is an intergovernmental cooperation mechanism in Northeast Asia, supported by the United Nations Development Programme, with a membership of four countries: People's Republic of China, Republic of Korea, Mongolia and the Russian Federation. The mandate of the GTI geographically covers so-called the *Greater Tumen Region* (GTR) which includes China's three Northeast provinces and Inner Mongolia, three eastern provinces of Mongolia, the eastern ports of ROK and the Primorsky Territory of Russia.

Figure 1: Greater Tumen Region


*Source: GTI*

Since its creation, the GTI has remained a unique intergovernmental platform for economic cooperation, fostering peace, stability and sustainable development in Northeast Asia. It is playing a significant role in expanding policy dialogue and strengthening a business-friendly environment in the region, therefore contributing to the improvement of living standards through the development of infrastructure and the promotion of trade and investment.

The transport sector is deemed as one of the five priority cooperation areas under the GTI framework. In 2010, to enhance the cooperation in transport sector the GTI Transport Board, established in 2009, adopted the GTI Transport Cooperation Program 2010-2012. The top priority among the projects and activities under the Program was placed to the "Integrated Transport Infrastructure and Cross-Border Facilitation Study for the Trans-GTR Transport Corridors" ("GTI Transport Corridor Study") project. The GTI Transport Corridor Study was initiated to identify main infrastructure and non-physical bottlenecks for passenger and freight movement.

GTI Transport Corridor Study recommended list of "soft" measures and infrastructural projects for operationalization of the six corridors in the form of Regional Transport Strategy and Action Plan. The

Strategy along with the Action Plan was approved by the Transport Board on August 1, 2013. Its implementation will require both policy efforts, coordination in transport planning and investments in infrastructure. Infrastructure investments being massive money allocation require thorough analysis and planning.

GTI member countries seeing construction and modernization of transport infrastructure as one of the main components for the region's development are seeking ways for the implementation of the Regional Transport Strategy and Action Plan.

GTI and its secretariat is an intergovernmental policy dialogue platform under the legal umbrella of UNDP China whose main role is limited to assisting GTI and its secretariat in terms of administrative and legal affairs, meaning of no project funding engaged. In addition, Asian Development Bank (ADB), the single multilateral public financing institution in Asia for regional project seems also very limited mainly due to Russian being non-member of ADB. Taking into account increasing demand for regional public goods e.g. transport infrastructures, and limitedness of project funding from international/multilateral public entities, GTI member countries, therefore, agreed to formulate the Northeast Asia EXIM Banks Association within GTI framework. In 2012, China Eximbank, Korean Eximbank and Mongolian Development Bank, singed an MOU on Establishment of Northeast Asia EXIM Banks Association. In August 2013, Russian Vnesheconombank joined the MOU. The Association aims at easing the investments needs of the region. Even its non-binding nature, the Association and member banks are expected to take their financial part in GTI project implementation process either collectively or individually.

Many regional infrastructure projects, in particular cross-border project e.g. constructing bridges or railways, entails a number of not only legal issues but also technical issues when structuring finance and investment scheme as many agents such as different nations, local governments and many companies with different nationality may get involved.

A study was proposed aimed at extending the GTI Transport Corridor Study efforts by summarizing financial schemes available for member countries in the region and advising the appropriate options for the projects in the Action Plan.

The study was approved by the 3rd meeting of the GTI Transport Board (Aug 1, 2013) and is supported by funding from UNDP and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. An international consultant has been retained to deliver the study.

## 1.2 Objective of the Study

The objective of the consultancy is to ensure feasibility of the Regional Transport Strategy and Action Plan through providing summary of possible options for financing infrastructure development available in accordance with national legislations and existing regional practices.

Following the recommendation of the GTI Transport Corridor Study the working assumption for the financing strategy is that the focus should be on private financing in view of apparent budget constraints of the involved countries and the potential benefits of private sector participation, most notably accelerating of investments and enhanced efficiency and effectiveness in project delivery.

It is furthermore to be noted that the focus of the financing strategy is on infrastructure investments with a regional impact i.e. investments that are beneficiary to all countries in the Greater Tumen Region. Infrastructure investments with a local impact are assumed to be the responsibility of the respective countries themselves.

The study is a desk study based on international best practices and country reviews and has not take into account any consultations with concerned public agencies or any other stakeholders.

## 1.3 Structure of the Report

The report firstly presents the finance need in terms of an overview of the proposed investment program and its main characteristics to the extent relevant for its financing potential.

The report then presents a theoretical framework for the infrastructure finance spectrum introducing the different design parameters for a finance strategy.

Next the conduciveness and readiness for private financing of infrastructure in the concerned countries is indicated based on international research in order to indicate the opportunities and achievability of using private finance for infrastructure development in the respective countries.

The following chapter provides a review of the respective sectors larded with international examples of using private financing for developing infrastructure in order to get an understanding of the respective possibilities and requirements.

Based on these finding a strategy is presented to finance the GTI investment program, which is summarised in the conclusions section.

# 2 Finance Need

## 2.1 Transport Corridors

In 2001, the Transportation Subcommittee of the Northeast Asia Economic Conference Organizing Committee identified nine Northeast Asia (NEA) transportation corridors that can be used by all the countries of the region as major international corridors. Six of these nine corridors have been identified in the GTI Transport Corridor Study as trans-GTR Transport Corridors. These corridors are:

**Trans-GTR Transport Corridors**

1. Tumen Transport Corridor (TTC): ports in Tumen River Delta – Changchun – East Mongolia –Siberian Land Bridge (SLB)
    a. Tumen Road Corridor
    b. Tumen Rail Corridor
2. Suifenhe Transport Corridor (STC): ports in Primorsky Territory in Russia – Suifenhe – Harbin – Manzhouli – Zabaykalsk – SLB
3. Siberian Land Bridge (SLB): ports in Primorsky Territory in Russia – Europe
4. Dalian Transport Corridor (DTC): Dalian – Harbin – Heihe – Blagoveshchensk - SLB
5. Korean Peninsula West Corridor (KWC): Busan – Seoul – Pyongyang – Sinuiju – Shenyang – Harbin - SLB
6. Korean Peninsula East Corridor (KEC): Busan – Ra-Son – Khasan – Ussuriysk – SLB

**Other NEA Transport Corridors**

7. BAM Railway: Vanino – Taishet - SLB
8. Tianjin – Mongolia Transport Corridor: Tianjin – Beijing – Ulaanbaatar - SLB
9. China Land Bridge (CLB) Transport Corridor: Lianyungang Port – Kazakhstan – Europe

Figure 2: Trans-GTR Transport Corridors


*Source: GTI*

The GTI Transport Corridor Study recommended list of "soft" measures and infrastructural projects for operationalization of the six corridors in the form of Regional Transport Strategy and Action Plan.

The six transport corridors have been analysed thoroughly in the GTI Transport Corridor Study. 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 effectiveness of the regional transport network. However it was decided for the transport study 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.

## 2.2 Performance Constraints

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.

However 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, 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 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 that 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.

There are missing bridges that 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 optimal. 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 Rajin Economic 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).

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.

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 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.

**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 GTI transport study has adopted 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.

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.

## 2.3 Investment Program

In order to address the physical constraints an investment program has been designed in the GTI transport study that amounts up to some USD 3.8 billion including preparatory costs (see annex for overview of projects).

The investment program lists the key projects which have been identified above through the review of the GTI Transport Corridors. Certain projects however do not appear in the list. This is the case of the vast investment program required to modernize the transport network in DPRK and fully reconnect with ROK as 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 investment program as per the GTI transport study has been somewhat updated reflecting some recent events most specifically (i) modernization of the Hunchun – Zarubino railway completed in December 2013, (ii) reconstruction of Hunchun Interchange Loading Station started in August 2011 and (iii) completion of Quanhe – Rajin Road in 2012.

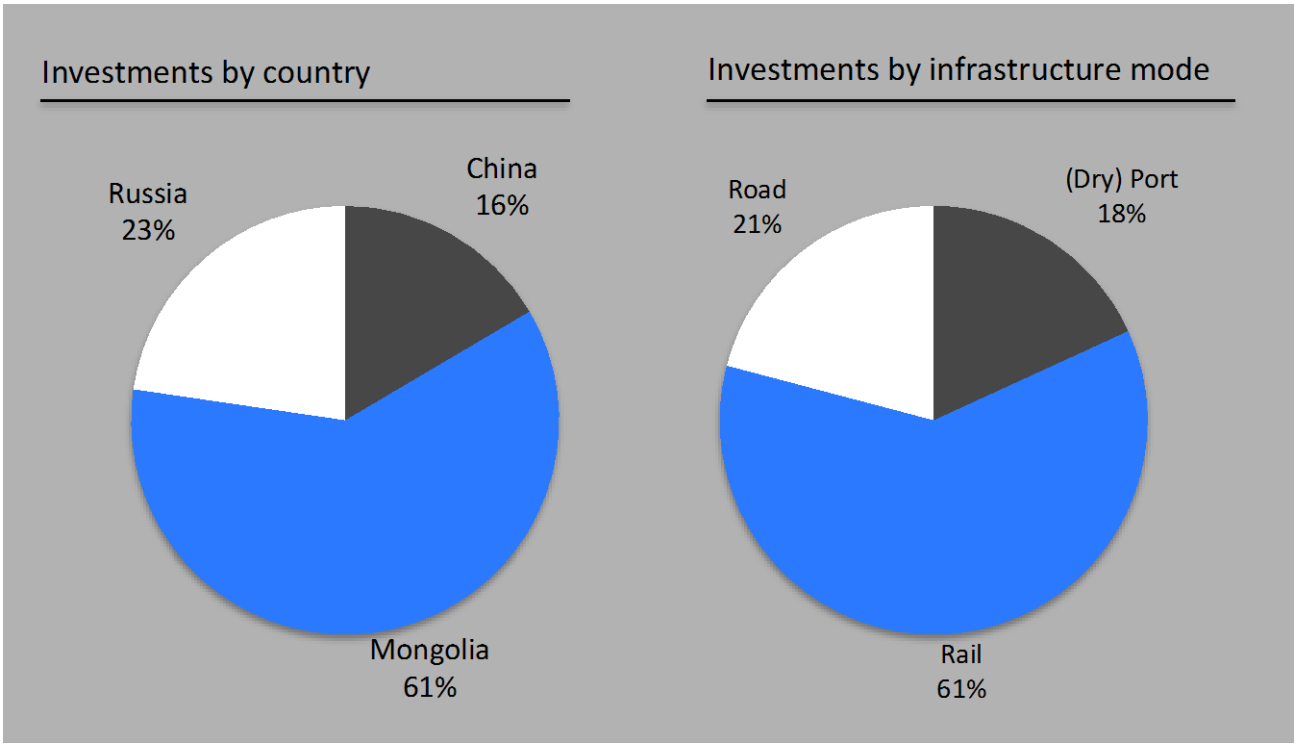
Consequently the program to date essentially encompasses 10 projects and mounts up to around USD 2.8 billion.

Table 1: Investment Program (in USD million)

| # | Project | Mode | Country | Corridor | Cost Estimate |
|---|---|---|---|---|---|
| **1** | Khuut – Nomrog Railway | Rail | MON | TTC | 903 |
| **2** | Choibalsan – Nomrog Highway | Road | MON | TTC | 579 |
| **3** | Nomrog BCP | BCP | MON | TTC | 2 |
| **4** | Arxan – Ulanhot Railway and Transshipment Yard | Rail/BCP | PRC | TTC | 251 |
| **5** | Hunchun Logistic Centers | Rail | PRC | TTC | 81 |
| **6** | Zarubino Port Container Terminal | Port | RF | TTC | 402 |
| **7** | Choibalsan – Ereentsav Railway | Rail | MON | STC | 200 |
| **8** | Pogranichny Container Terminal | Dry Port | RF | STC | 101 |
| **9** | Amur River Bridge | Rail/Road | RF/PRC | DTC | 252 |
| **10** | Baruun Urt – Bichigt | Road | MON | TTC | TBD |
| | **Total** | | | | **2,771** |

It can be concluded that Mongolia is responsible for the majority of the investments and that the investments are dominated by railway projects and to a lesser extent roads and (dry) ports.

Figure 3: Investment Program by Country and by Sector




*Source: GTI Transport Study*

# 3 Finance Options

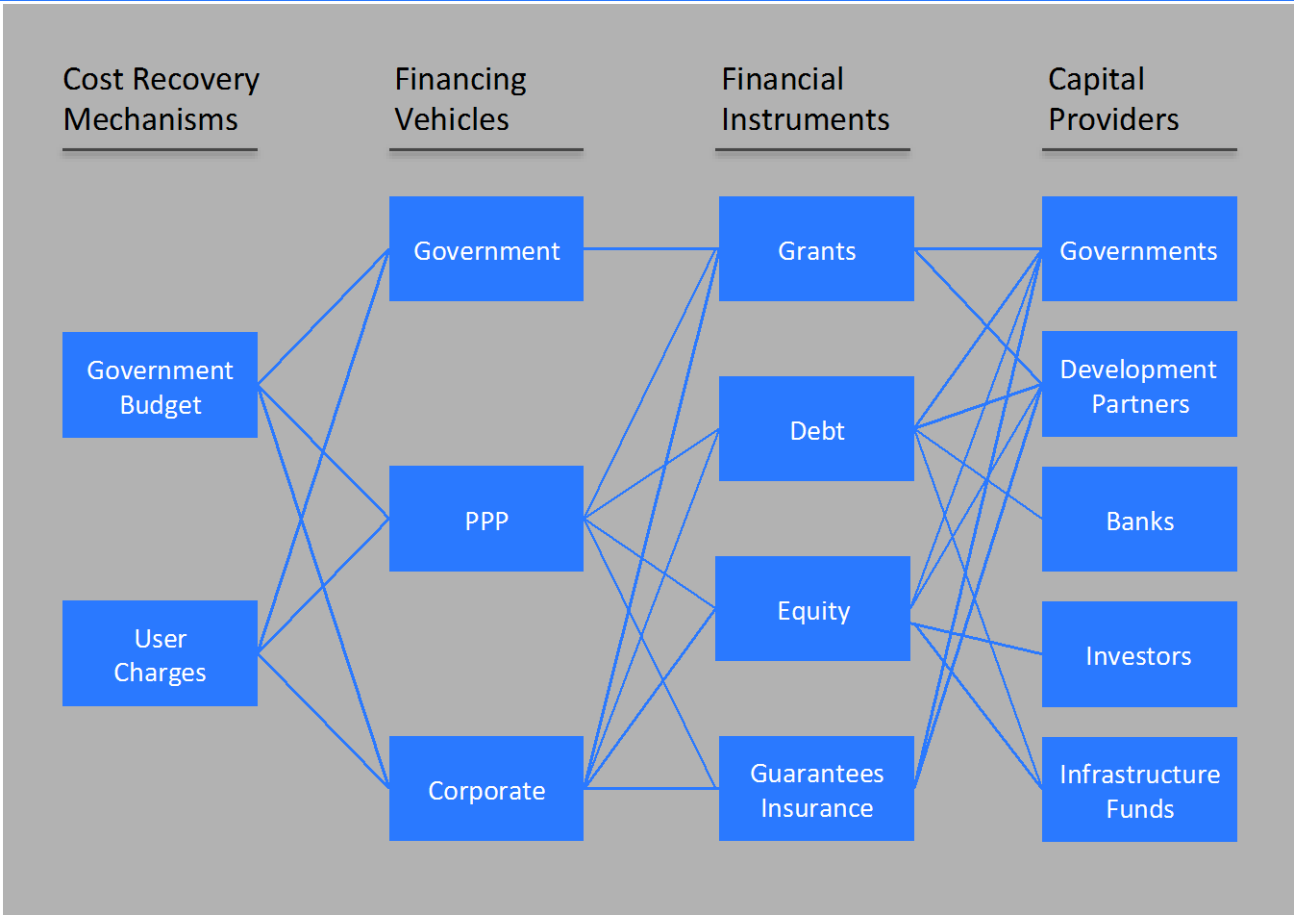
## 3.1 Finance Spectrum

When it comes to designing a strategy for financing public infrastructure, governments have the following design parameters, which will have to be addressed in a coherent and cohesive manner:

1. Cost Recovery Mechanisms
2. Financing vehicles
3. Financial instruments
4. Capital Providers

The following figure depicts the relation between these design parameters, which will be further elaborated upon in the coming sections.

Figure 4: Infrastructure Finance Spectrum




*Source: Consultant*

## 3.2 Cost Recovery Mechanisms

The first design parameter is the cost recovery mechanism i.e. how will the costs necessary for financing the development of the infrastructure asset be recovered. There are essentially 2 options:

(i) Government Budget
(ii) User Charges

### (i) *Government Budget*

When costs for public infrastructure are recovered from the government budget it essentially implies that the costs are borne by the society at large. The government budget can be funded from various sources, most notably (i) income from taxes and (ii) public debt. Income from taxes implies that all current taxpayers contribute to infrastructure development. Public debt needs to repaid over time and implies that all future taxpayers contribute to infrastructure development.

### (ii) *User Charges*

Rather than recovering the costs from the government budget, governments also have the option to recover the costs from infrastructure development through user charges. This is also known as the user pay principle and implies that the costs are not borne by all taxpayers including those who do not make use of the asset but only by the users of the assets. Some call this a more honest system. Why would someone who lives in the east pay for a road in the west? On the other hand it might be argued that everyone benefits from infrastructure, and not only those who make use of it. The person living in the east benefits from the road in the west, which makes it possible for example to import and transport goods the person needs.

## 3.3 Financing Vehicles

Financing vehicles refers to the organizational setup for financing the infrastructure asset in question. Essentially the following options apply:

(i) Government
(ii) Corporate
(iii) Public Private Partnership

### (i) *Government*

The most conventional project delivery scheme for public infrastructure is a contract between the government i.e. public authority and a private entity i.e. developer whereby the developer deliver the infrastructure asset in accordance with the specifications defined by the public authority and the developer receivers payment from the government for the delivery of the infrastructure asset. When it comes to transport infrastructure, this is mostly the case for road infrastructure.

### (ii) *Corporate*

In some cases, the infrastructure asset is related to a public service provision that has been incorporated by a government. For transport infrastructure, this could apply to railways, ports and airports. These corporates are mostly state-owned enterprises though on occasion, such a corporation could also be a joint venture between the government and a commercial private entity, in terms of a shared ownership of the undertaking.

Corporates mostly use user charges for cost recovery though it is also possible, when income from user charges is insufficient to recover costs, to use government budget to recover the costs of the respective public service delivery.

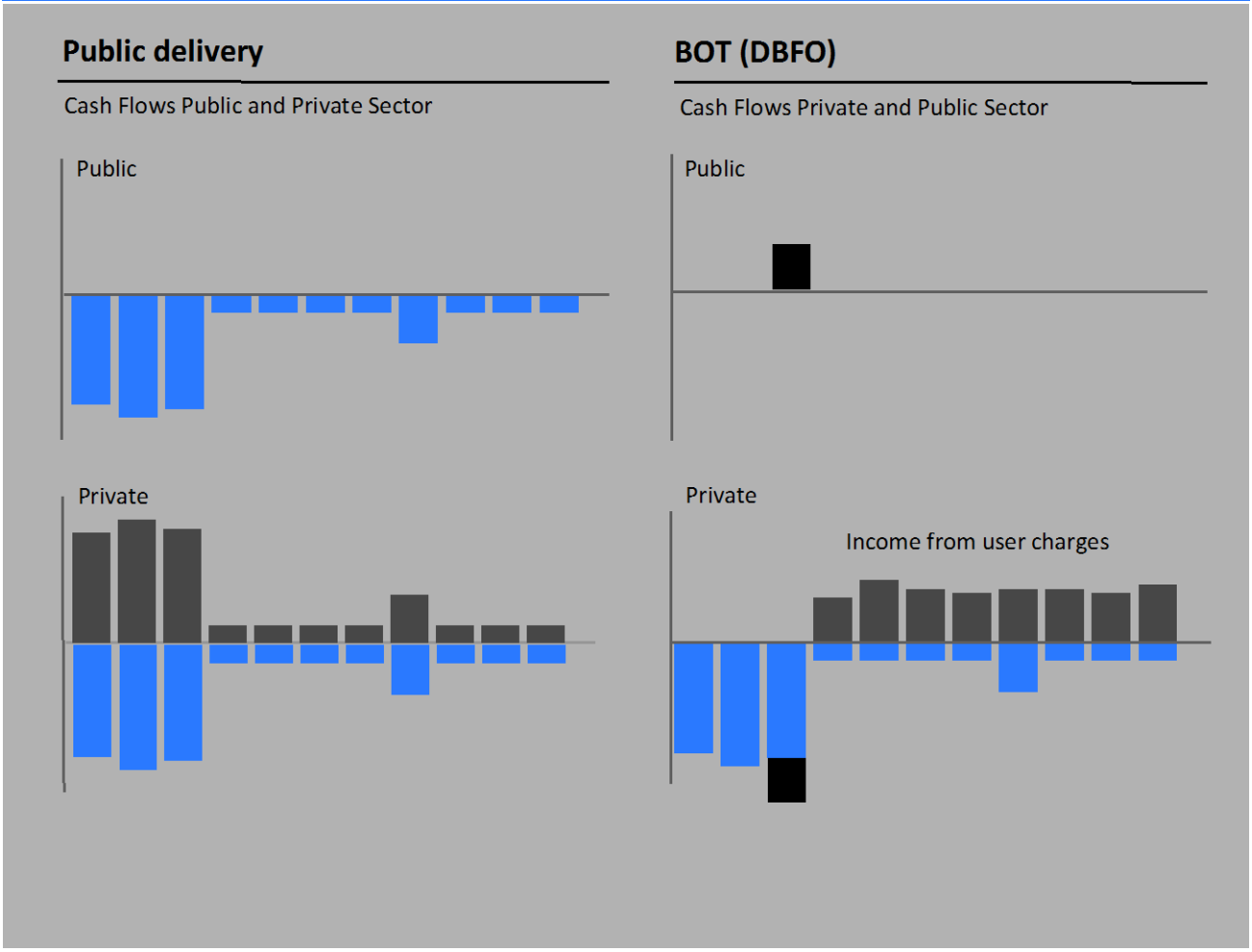
### (iii) *Public Private Partnership*

The third possible financing vehicle is a contractual agreement between the government and a private commercial entity that encompasses the delivery of a public service for a defined period of time and that

could include the development of an infrastructure asset necessary for the delivery of such services. Such a contractual arrangement is commonly referred to as a Public Private Partnership (PPP) and is characterized by a contractual allocation of risks, rights and obligations between the government and this private entity.

The most common mode of PPP is based on the user pay principle and is commonly known as a Build Operate Transfer (BOT) concession or Design Build Finance Operate (DBFO) contract. This arrangement is based on the principle that the future income from user charges should be used to recover the costs of developing, financing, maintaining and operating the infrastructure asset.

Figure 5: Public Delivery versus BOT




*Source: Consultant*

If the discounted value (adjusted for cost of capital) of the future flows of income from user charges is not sufficient to recover the operating and capital expenditures, the project has a so called viability gap, which has to funded from other sources.

If on the other hand, the discounted value of the future flows of income from user charges is more than sufficient to recover the operating and capital expenditures the private entity is able to pay an upfront fee i.e. concession fee reflecting the value of the right to charge users for the use of the infrastructure asset.

The same principle applies also to corporates that are entitled to charge users a fee for the use of the infrastructure asset, for example:

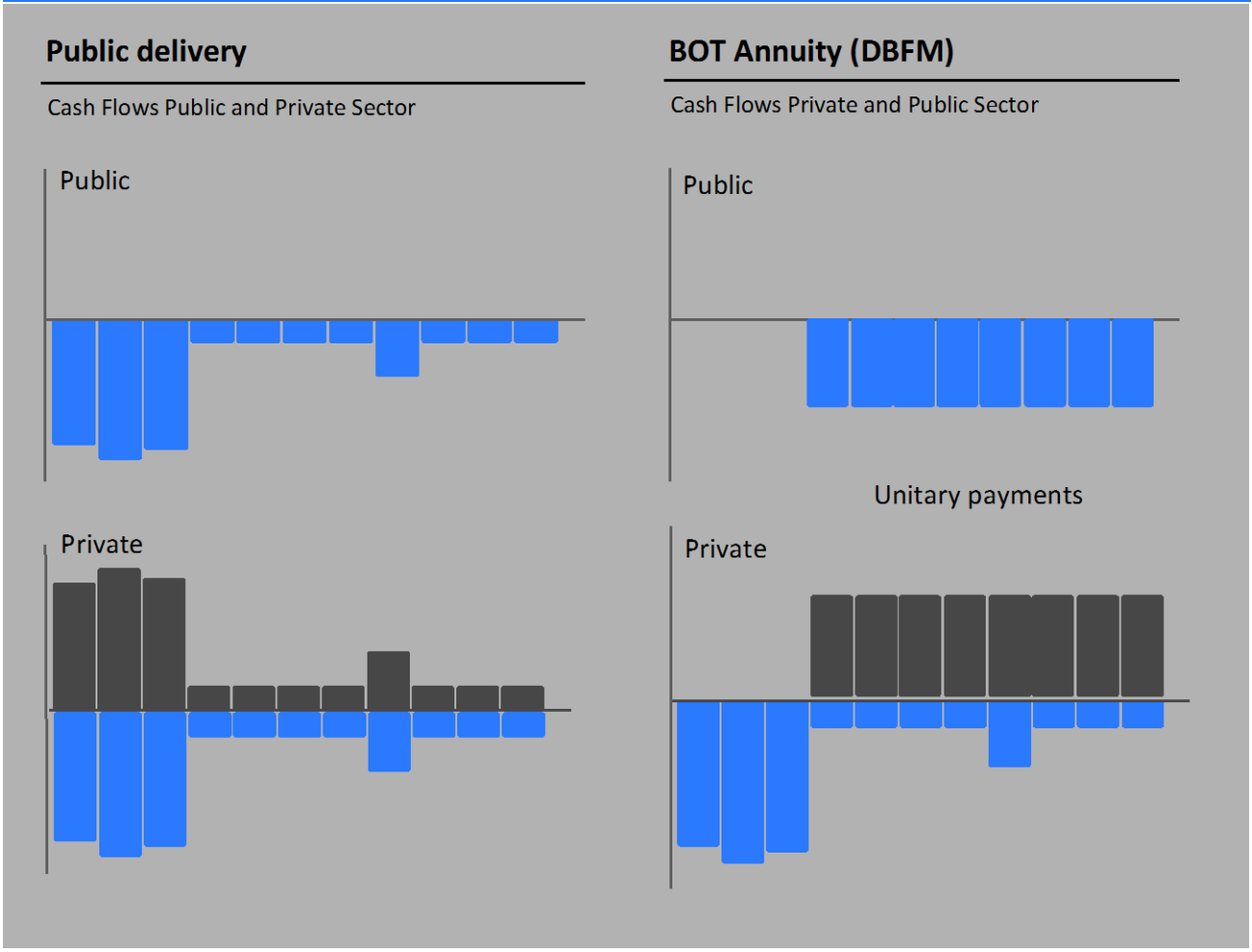
- Track access charges for the use of railways;

- Landing fees for the use of an airport;
- Dockage dues/mooring fees/port dues for the use of a port;

The main difference however between a PPP i.e. project finance and corporate finance is that if income from user charges is insufficient to service debt obligations, the debt providers i.e. banks are entitled to other sources of income of the corporation or even the assets of the corporation. Project finance as applied in PPP is therefore often referred to as non-recourse financing.

PPP arrangements using government budgets that involve the development of infrastructure are commonly referred to as Build Operate Transfer (BOT) Annuity concessions or Design Build Finance Maintain (DBFM) arrangements. In such arrangements, the private entity is responsible for the design, construction, financing, maintenance and operation of an infrastructure asset and receives a periodic fee based on pre-defined performance criteria in order to recover its costs including a fair and reasonable return on the investment.

Figure 6: Public Delivery versus BOT Annuity




*Source: Consultant*

The main difference between public delivery and BOT Annuity is the fact that in case of public delivery, current taxpayers pay for the infrastructure development if the current account is used. BOT annuity implies that future government budget is used i.e. future taxpayers.

## 3.4 Financial Instruments

Infrastructure projects frequently present relatively complex financial structures and arrangements. The financing package is likely to draw on several sources of funds in order to tailor it to the particular needs of the project and the investors. In response to this, an array of financing techniques has been developed to mobilize capital resources.

Finance can be provided in various ways reflecting the level of risk exposure for the capital providers. The most common modes of financing are:

(i) Grants
(ii) Equity
(iii) Debt
(iv) Guarantees and Insurance

A project can be funded through issuing different combinations of grants, debt, equity and hybrid instruments. Lenders will always seek comfortable level of equity from shareholders to ensure that the project sponsors are seriously committed to the project and have vested interest in seeing the project succeed. Thus, projects with strong cash flows and low risk can be structured with low levels of equity, whereas higher risk weak projects require higher equity levels.

### (i) *Grants*

Grants are essentially a free mode of finance i.e. there is no obligation to repay a grant. The use of grants is to be justified by the economic impact of the investment.

### (ii) *Equity*

Equity represents an ownership claim on the earnings and assets of a project. That is, after holder of debt claims are paid, the management of the company can either pay out the remaining earnings to equity holders (project sponsors) in the form of dividends, or reinvest the earnings back into the project. For infrastructure projects sponsors can be both public and private.

The willingness of governments to allow investors to get the high returns they require is an important factor in the ability of infrastructure projects to attract equity from private sources.

### (iii) *Debt*

The critical element in project finance is the provision of debt to finance a project. Financing with debt brings liabilities to the project company. These are obligation that require a payout of principal and interests within a stipulated time, and are frequently associated with a fixed cash burden.

There is an extensive market for long-term debt financing for transport infrastructure projects, and markets have become increasingly receptive to project debt issues that are properly structured. Debt financing is often provided through private placements (that is, negotiations between the sponsor and specified individual lenders). Alternatively, this financing can in certain circumstances be raised through capital markets (e.g. via public bond issue).

Equity and debt have to be repaid from either the government budget and or user charges. The difference between equity and debt is that debt has to be repaid first and if there is still cash left, equity will be repaid.

This difference is also reflected by the cost of equity versus the cost of debt. The cost of equity is higher because the risk exposure for equity providers is higher than debt providers as they are last in line.

#### (iv) *Guarantees and Insurance*

Guarantees and insurance are used to optimize the bankability of the project and to minimize the risk for the equity providers to lose their money in case the project does not turn out to be successful.

Project sponsors are able to insure the project against various risks, such as casualties and political risk. Under the traditional insurance structure, the investors purchase insurance against certain risks from an insurer, and payment are made in the form of premiums.

## 3.5 Capital providers

The final parameter in the finance spectrum is the capital provider. The type of capital providers varies per financing mode. Grants are provided primarily by governments and to some extent by development partners, if a country has insufficient budget resources. Such development partners are typically International Finance Institutions (IFI) like World Bank, Asian Development Bank and alike. Debt facilities are predominantly provided by banks but can also be provided by governments and or IFI's. This can be done directly or through infrastructure funds. Equity is typically provided by investors/developers but can also be provided for by governments. Also pension funds are becoming increasingly active as investors in infrastructure because of the long-term nature of infrastructure vis-à-vis the long-term nature of a pension funds' obligations.

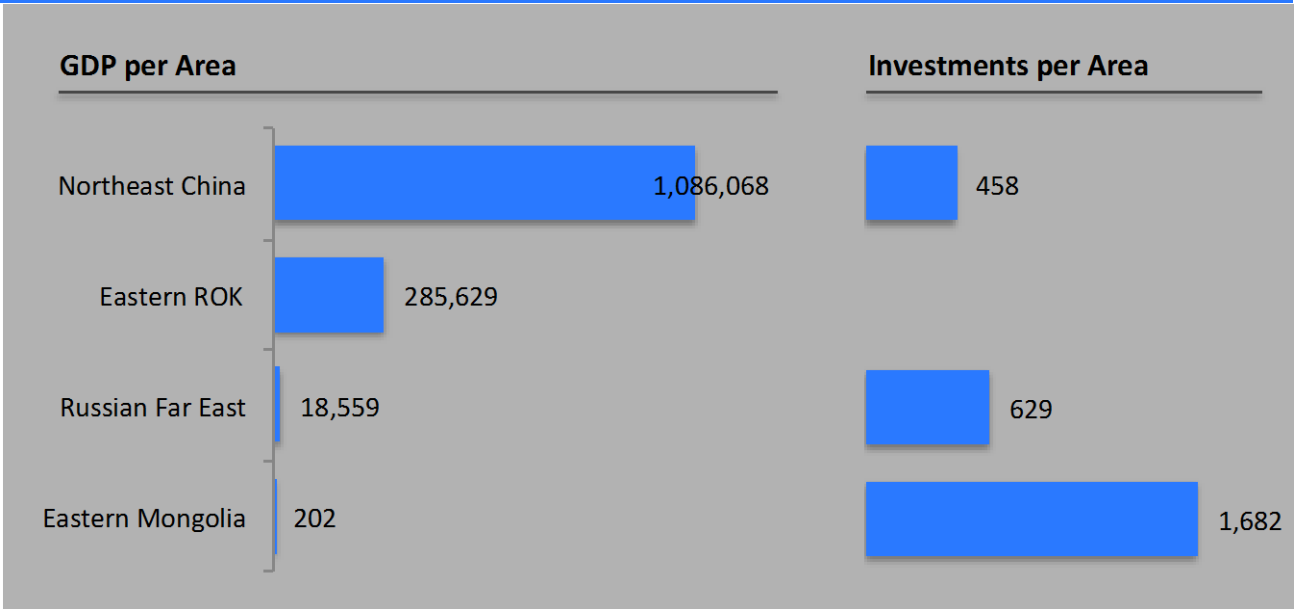
Governments also have the option to establish a dedicated fund ring-fenced for the purpose of developing and or maintaining a specific type of infrastructure asset, like for example in case of a Road Fund, or for infrastructure in general. Government budget could be used to source infrastructure funds, or these funds could be sourced by user charges like for example fuel levies. The funds could provide their capital as grants or like equity and or debt.

# 4 Country Profiles

## 4.1 Economic Profile

The economic conditions in the Greater Tumen Region are quite diverse. The GDP of Northeast China is more than 5,000 times the GDP of the Eastern Mongolia, whereas Mongolia is responsible for 61% of the investment program. In other words, the smallest economy is responsible for the majority of the investments.

Figure 7: GDP and Investments per Area (in USD millions)




*Source: GTI Transport Corridors Study*

Also in terms of other economic and fiscal indicators, it is not likely that Mongolia will be able to allocate sufficient government resources to the GTI investment program. It may be able to increase public debt or increase taxes though as the GDP based is relatively small, this will have limited impact.

Table 2: Economic and Fiscal Indicators 2012

| Country | Current Account Balance | Revenues | Expenditures | Public Debt as % of GDP | GDP per Capita | Tax revenues as % of GDP |
|---|---|---|---|---|---|---|
| | *USD billions* | *USD billions* | *USD billions* | *%* | *USD* | *%* |
| **Mongolia** | -1 | 3.4 | 3.5 | 18 | 5,885 | 34 |
| **Russia** | 199 | 469 | 414 | 8 | 17,884 | 29 |
| **ROK** | 31 | 272 | 249 | 33 | 33,189 | 27 |
| **China** | 155 | 1,838 | 2,031 | 23 | 9,844 | 17 |

*Source: IMF, WTO, Heritage Foundation*

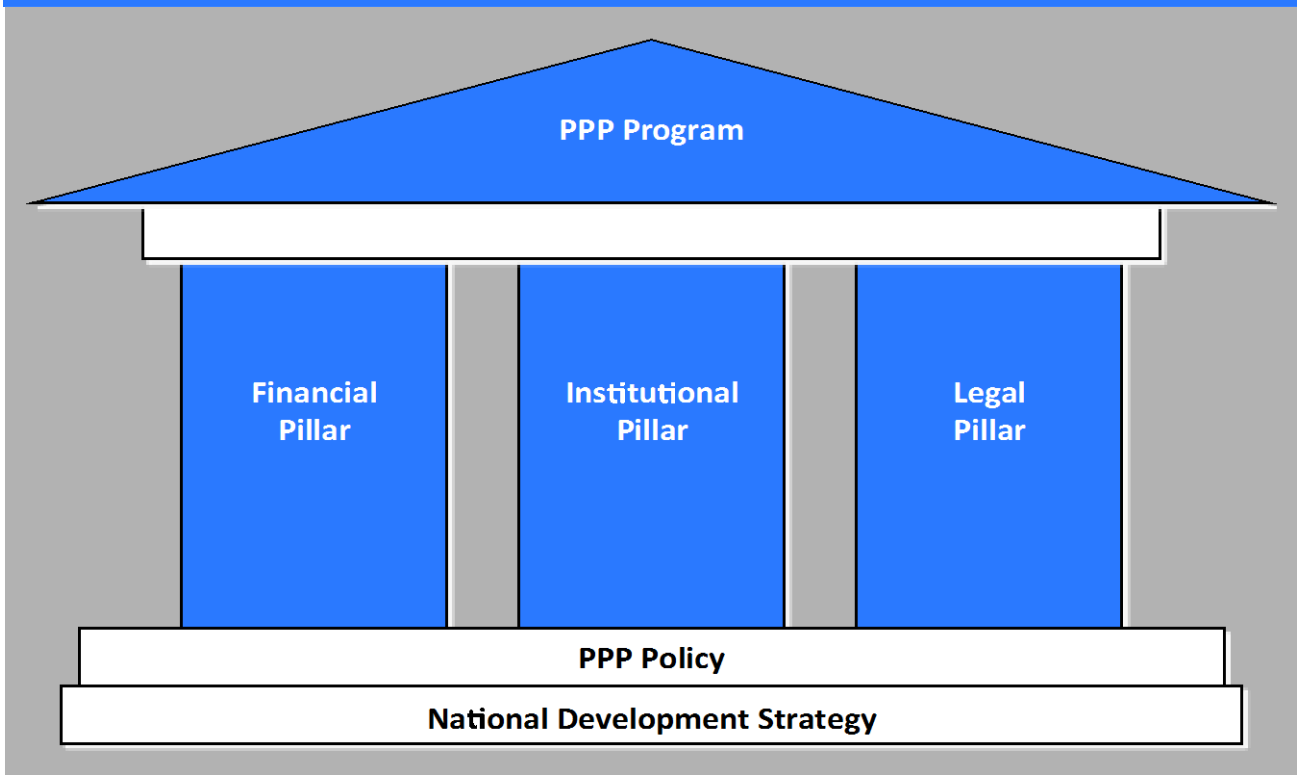
## 4.2 PPP Readiness

The concept of PPP is becoming increasingly acknowledged and applied throughout the world as an efficient and effective mean to develop public infrastructure and or deliver public services. PPPs are more complex than conventional project delivery schemes and need to be well prepared and supported by a conducive environment. The latter is commonly reflected through a so-called PPP framework which is to enhance the likelihood of successful implementation of PPP.

Although there is no single "model" PPP framework, international experiences illustrate that a PPP Framework is at least to include the following pillars.

- **PPP Policy**, reflecting the government's objectives and strategy for PPP based on the country's long-term development strategy and investment program, and providing the foundation for PPP pillars;
- **Finance Pillar**, reflecting the government's financial instruments for facilitating the preparation and implementation of PPPs taking into account the constraints and conditions for accessing private finance.
- **Institutional Pillar**, reflecting the government's institutional setting and capacity with regard to preparing, implementing and monitoring PPPs. This includes the management of the identified financial instruments and ensuring suitable checks and balances to mitigate fiscal risks through gateway reviews.
- **Legal Pillar**, reflecting the legal and regulatory environment for enabling and facilitating PPP and as such legalizing, to the extent appropriate, the financial and institutional pillar.
- **PPP Program**, indicating prospective PPP projects and the roadmap for implementation.

Figure 8: PPP Framework



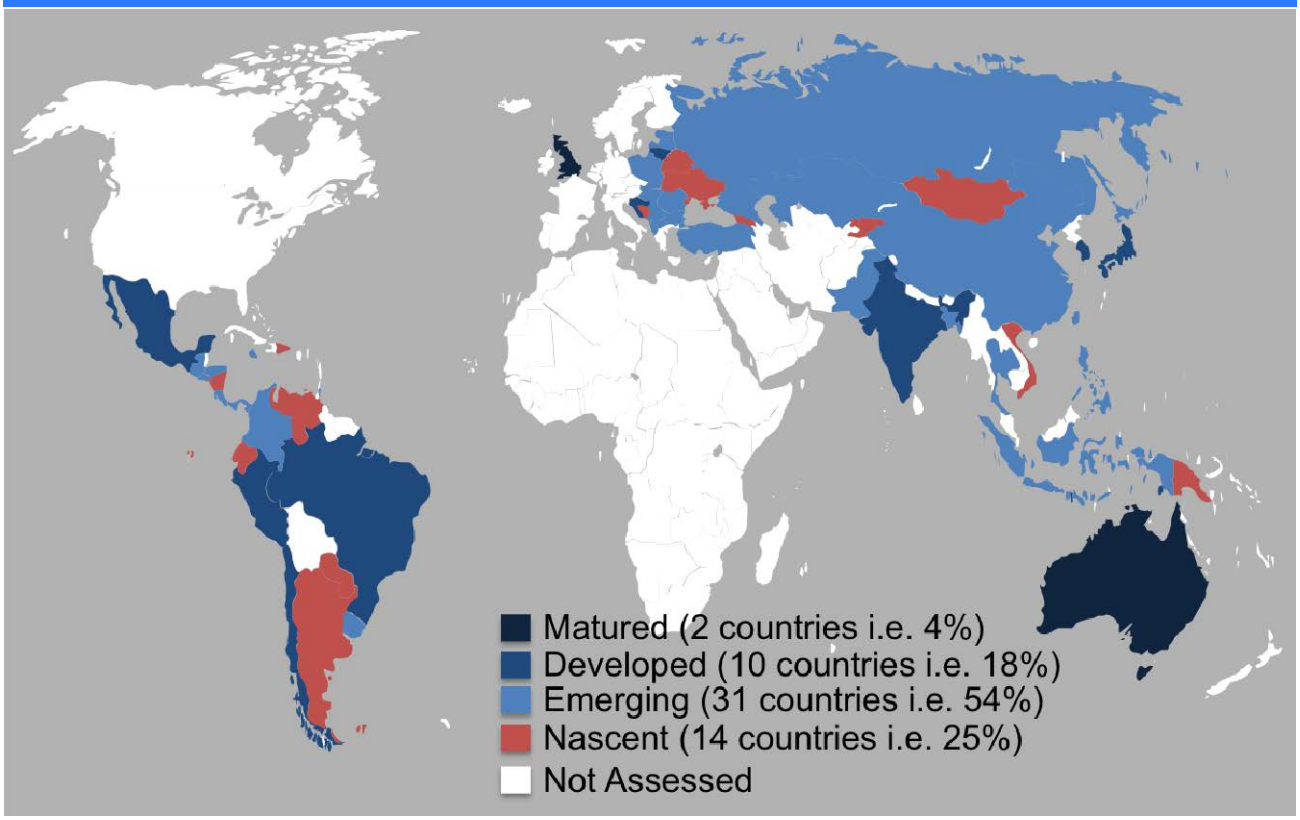

*Source: Consultant*

The Economist Intelligence Unit (EIU) using the so-called Infrascope methodology, which is endorsed by ADB, WORLD BANK (PPIAF), EBRD and the Inter-American Development Bank (MIF) has undertaken such a diagnostic review for Kyrgyzstan in 2012. In total they have reviewed 57 countries in the period 2010 – 2012. The methodology is based on benchmarking the PPP readiness of countries using a range of criteria including:

- Regulatory and institutional framework;
- Operational maturity;
- Investment climate;
- Financial facilities;
- Sub-national adjustment;

The EIU concluded for the GTI member states that China and Russia are considered emerging PPP markets and ROK is already a developed PPP market. Mongolia on the other hand is still considered as a nascent PPP market.

Figure 9: PPP Readiness Benchmark




*Source: Economist Intelligence Unit*

The following paragraphs provide further details on the EIU assessment for the GTI member states.

### Russia

Concessions in Russia are governed by Federal Law No. 115 "On Concessions" and by elements of The Civil Code of Russia, The Budget Code and other federal, regional and investment laws. There is no definition of PPP set by the law at the federal level; as a result, some non-concession types of projects are legislated and implemented at the sub-national level. According to data from the World Bank, between 2001 and 2011 Russia implemented PPPs in the energy, transport and water and sanitation sectors, with few instances of distress or failure. Russia has involved the private sector in infrastructure projects since 1992, though not always in the form of a PPP. In the past Russia has most commonly conducted divestitures, with the largest investment in projects going to the energy sector.

Multiple institutions are active in PPPs, including the Ministry of Economic Development which is in charge of policy-making at federal level; PPP councils at sectoral ministries involved in project selection; the Vnesheconombank (development bank); and dedicated PPP centers working in PPP promotion and capacity building. The Ministry of Finance oversees budget allocation. Tendering is performed in accordance with pre-defined rules and procurement regulations. Regional and local governments are also active in PPP lawmaking and project implementation. Country sovereign risk has been stable as public-sector external debt is low. Russia has partnered with the World Bank's Multilateral Investment Guarantee Agency in the past to guarantee infrastructure projects, and its investment climate ranks well thanks to political support in favor of PPPs, its large size and GDP per capita.

Institutional actors involved in PPPs are not efficiently coordinated, which undermines the impact of their activity. Moreover, although formal bid procedures are fairly well outlined, project awards have suffered from low transparency and low competition in practice. Technical capacity is limited and procedures for planning and project design are not applied systematically. Risk-allocation practices have not been implemented so as to facilitate private participation. Tariff setting for public services does not usually follow a market-based approach, limiting the ability to generate stable cash flows. There is political support for PPPs, but it varies greatly across sectors and government levels.

### China

China has a wealth of experience with PPPs, going back to the 1990s. 1990 to 2011, there were 1018 infrastructure projects with private participation in China in sectors like energy, telecom, transport, water and sewerage, with a total investment of USD 116.4 billion[1].

Nevertheless, the legal environment is not strong, and the majority of projects involve State-Owned Enterprises (SOE), rather than genuinely private concerns. Bureaucracy and regulation at all levels, along with a lack of provision for risk-allocation or compensation in China's PPP rules, add to the difficulty. The Ministry of Housing and Urban-Rural Development has issued contract samples that strongly reinforce the importance of performance bonds at all stages, although this has not had much impact on the number of disputes during the concession period, which remains high. It is difficult to determine whether PPPs are selected based on value for money (VFM), as information related to appraisal and project details is not typically available.

China has no specific national-level PPP agency, with projects being treated in the same way as traditional state infrastructure projects. The State Council and its ministries approve PPP projects, and then oversee their management. Generally, the government is keen on greater use of PPP projects owing to the country's massive infrastructural requirements, which local governments are not always able to meet. There is also a vast difference between the capacity of large localities, like Beijing, Zhejiang or Shanghai, to handle PPP projects, and that of more rural jurisdictions. Financing typically comes from offshore sources, in the form of syndicated loans or project finance deals through Hong Kong or Singapore.

### ROK

Since 1999 the country has had "umbrella" PPP legislation via the Private Participation in Infrastructure Act (PPI Act). This was updated in 2005 to enable Build-Transfer-Lease (BTL) models, as well as projects in a wider variety of areas. All stages of the PPP process are overseen by the Ministry of Strategy and Finance (MOSF), with the Private Infrastructure Investment Management Center (PIMAC) assisting in an advisory and guideline-drawing capacity. PIMAC has established consistently followed processes for VFM testing, proposal-preparation, tender-evaluation, and standard concession agreements. Any prospective project with a value of over Korean won 50 billion (USD 48 million) is subject to preliminary review, with either PIMAC (in the case of unsolicited projects) or the relevant agency (solicited projects, later reviewed by PIMAC) conducting VFM tests. The bidding process is considered fair, and there are no single-bid contracts, as invitations are issued again if only one bidder emerges. Currently, there are no PPP-specific dispute-

[1] World Bank: PPI database

resolution mechanisms, but private mediation firms, as well as the Office of the Ombudsman may offer mediation. The MOSF has submitted a revision to the PPP act to create a Dispute-Mediation Committee. PIMAC staff comprises trained engineers, accountants, lawyers, and project finance experts.

Unfortunately, however, MOSF staffs are frequently rotated, and politicized hiring/firing is a problem; this may lead to a lack of consistency and knowledge. Regarding risk-sharing, the standard concession agreement sets out how this will be divided, with case-by-case variations. In the early days of the country's PPP experience, the state was arguably too generous with minimum-revenue guarantees (MRG); the Incheon Airport Highway (1999) drew less than half the projected revenue, but the MRG meant that the government bore almost all the losses. Since 2005, however, MRGs have been phased out. Financial markets are relatively conducive to PPP financing, and, politically, both main parties support PPPs; however, there is a political taboo against projects in the water industry (sewage is an exception). There are no energy projects, either. At a local level, there is some concern that smaller regional authorities lack the capacity to handle PPPs.

### Mongolia

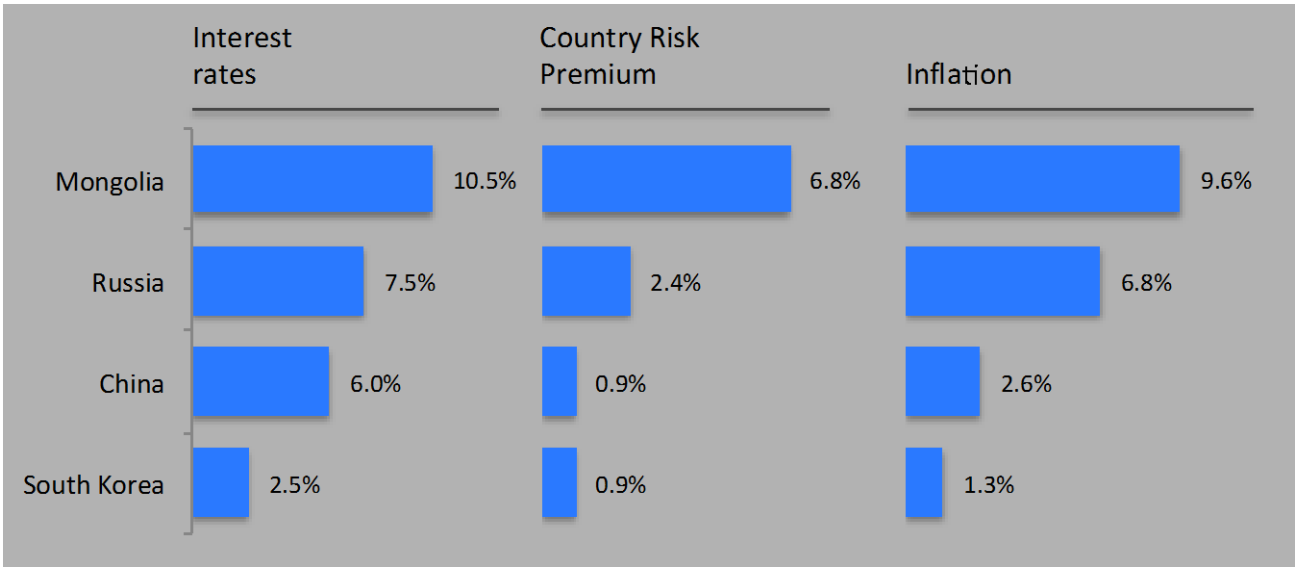
A Law on Concessions, based on international standards (albeit with some localized points), was enacted in March 2010. A resolution came into effect on July 2010 to establish tendering procedures, which will be overseen by a Tendering Committee. However, various other acts also form part of the legal framework for concessions, such as the Constitution, the Civil Code, and the Foreign Investment Law. There is no reference to risk-allocation, although there are provisions for compensation in case of changes in the law or economic circumstances. The new law provides a framework for PPP selection and decision-making, with Article 30 offering options on government support for concessionaires, such as loan guarantees and tax credits. There is some concern, however, that in practice PPP decision-making in Mongolia is weak; regarding previous PPP projects, and there is little evidence of cost-benefit analysis or benchmarking having been used.

There is a dedicated PPP Unit that oversees projects and operates under the purview of the State Property Committee, and currently maintains a list of 29 projects. As a new organization, it is still developing experience, and, owing to a lack of resources, is unable to hire many specialists; it is, however, receiving assistance from multilateral institutions. There is also concern over the below-market pricing of road transport, power, and water, which threatens the sustainability of PPPs in such areas. Furthermore, Mongolia had no experience of PPPs in the energy, transport, and water sectors over the past decade, although the private sector has stepped in with a number of Build-Own-Operate (BOO) transport projects implemented on the back of the resources sector. On a general level, Mongolia has a history of volatile politics and inefficient administration, which may even worsen as capital flows in as part of the nation's commodities boom. Underdeveloped capital markets also mean that the possibility of long-term financing is severely limited.

## 4.3 Financing Conditions

Also in terms of financing conditions, Mongolia appears to have the least attractive environment as illustrated by the relatively high interest rates, country risk premium, credit rating and inflation figures.

Figure 10: Financing Cost Parameters

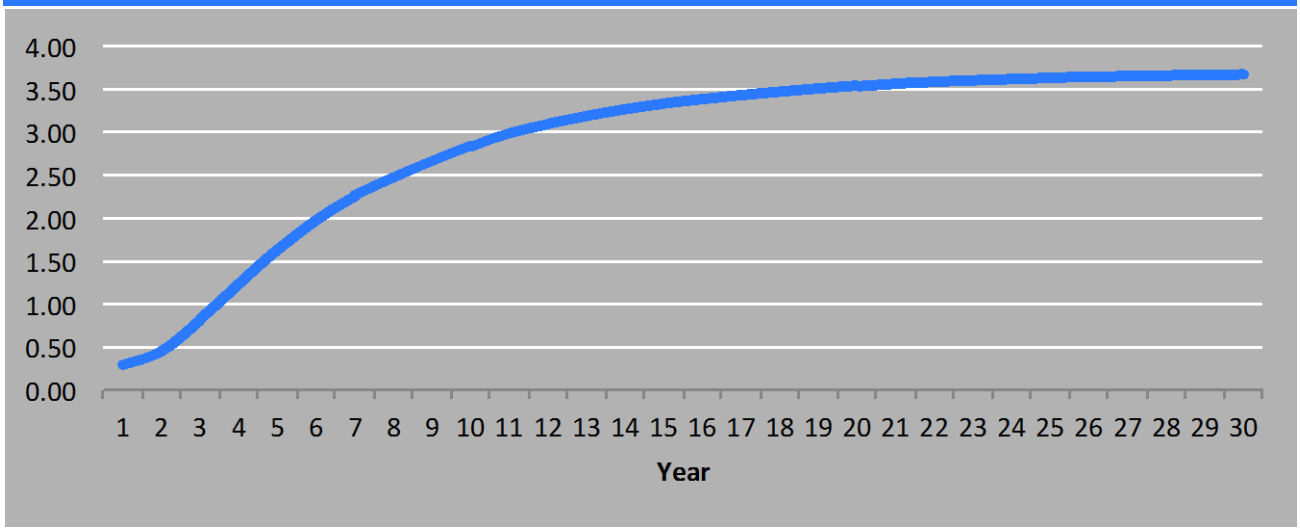



*Source: Tradingeconomics, Damodaron, World Bank*

Moreover, the adequacy of long-term financing facilities is the GTR is questionable. Efficient access to long-term financing is a critical success factor for private financing of infrastructure. Infrastructure typically has a long economic life, which allows for a cost recovery over a relatively long time span, mostly between 20 to 30 years. Ideally, sponsors want to use the entire life span to repay any financing in order to reduce the annual cash outflow.

In a well-matured PPP market, banks are able to offer 20-30 years loans at a competitive rate. Such loans are denominated in dollars, euro or any other hard currency. By using so-called swaps, the interbank interest rate e.g. LIBOR can be fixed for a long period of time, which reduces the uncertainty for capital providers.

Figure 11: USD Swap Rates

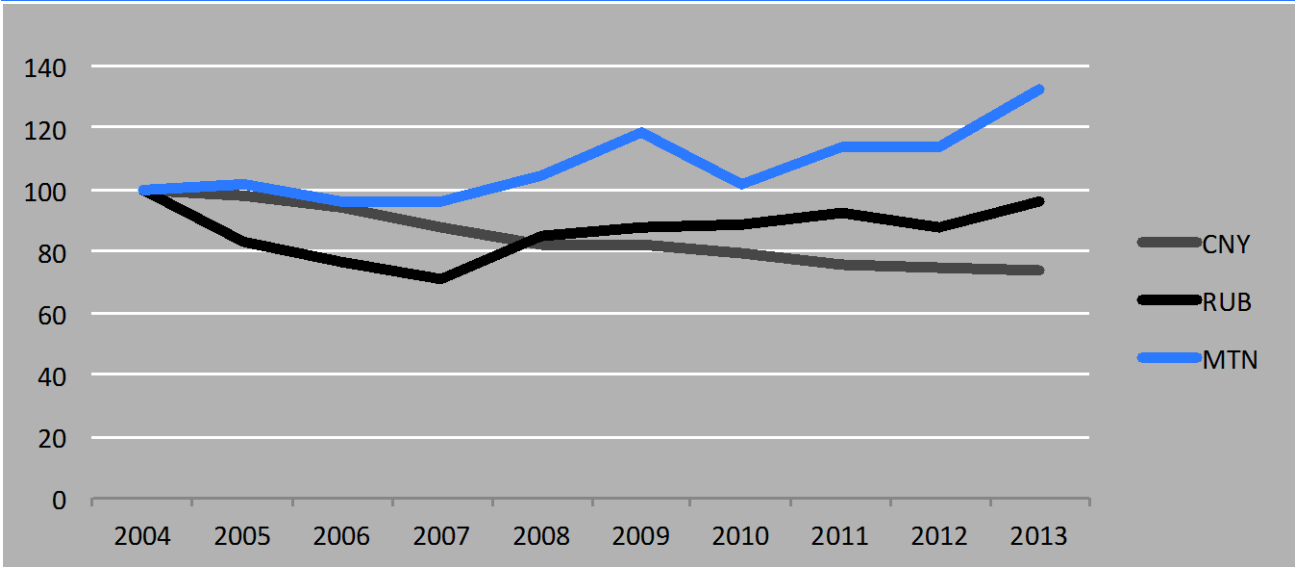



*Source: www.swap-rates.com*

However, the financial sector in the GTI member states appears to have only limited access to such instruments. Tentative review of the financial instruments in the GTR indicates that China has swap rates for RMB denominated loans though only up to 10 years[2]. In Russia, despite some recently signed high-value PPP arrangement, it looks as if the maximum period for an interest swap is 6 months[3]. The costs for these instruments are unknown.

Consequently, investors have to look for short-term local currency financing or long-term USD financing. That means either that capital providers have to accept a refinancing risk (what will be the interest rate when the fixed interest rate period ends?) or a currency risk (as potential revenues are assumed to be in local currency). The exchange rate volatility in the past decade for the relevant currencies in relation to the US dollar illustrates that the currency risk should not be neglected. Whereas the Mongolian Tugrik appreciated with some 30%, the Chinese Renminbi depreciated with some 30%.

Figure 12: Exchange Rate Volatility (2004 YTD = 100)




*CNY – Chinese Yuan (Renminbi), RUB – Russian Ruble, MTN – Mongolian Tugrik, YTD – year to date*

*Source: www.xe.com adapted by consultant*

Development banks could mitigate this risk exposure for investors, by providing long-term local currency financing and or swap facilities to fixate either local currency interest rates or exchange rates.

[2] www.icbc.com.cn

[3] www.roisfix.ru (National Foreign Exchange Association)

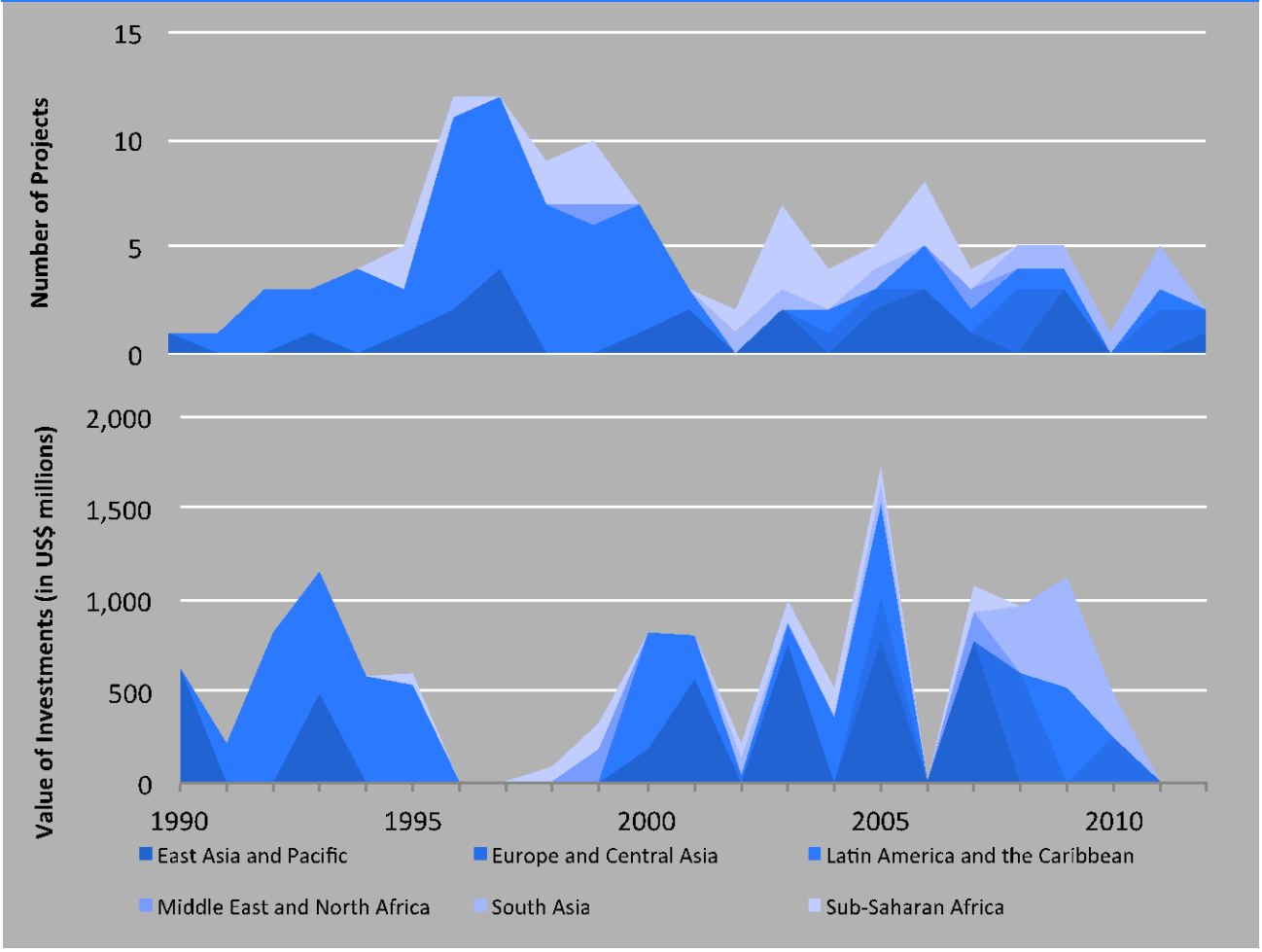
# 5 Sector Reviews

## 5.1 Railways

The objective of this section is to present recent trends and possible models for using private finance to develop railway infrastructure being the predominant mode of infrastructure in the GTI transport investment program. The possible models for private finance are to a large extent driven by the way the railway sector is organised as illustrated by some comparative country reviews.

In the last few decades the private sector has participated increasingly in the construction and operation of railway infrastructure, in particular high-speed lines, railway lines for freight transport and rail technology worldwide. In all these sectors, PPPs can open up possibilities to build and operate efficient rail systems with modern and clean technology. Railway projects providing for shared use of rail tracks may lead to efficiency gains and an increased revenue basis for states and private investors and make investment in PPP schemes more attractive

Figure 13: Private Participation in Railways 1990 - 2012




*Source: PPI Database (World Bank)*

However, railway PPPs are by no means a guarantee for success. For example, 11 out of 12 selected railway concessions in Sub-Saharan Africa are in financial distress and only 1 railway concession is delivering a satisfactory operational performance.

Table 3: Performance Review of Railway Concessions in Africa

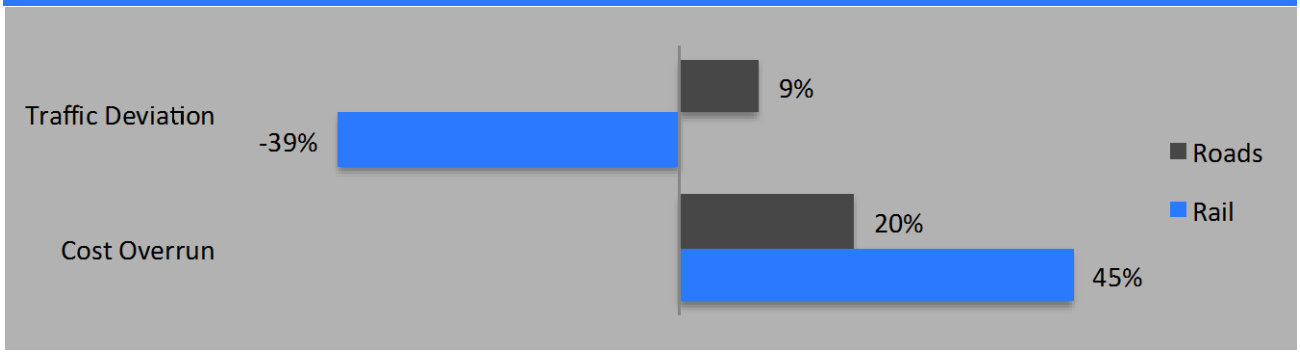
| Concession | Countries | Year | Operational Performance | Financial Performance | Cancelled |
|---|---|---|---|---|---|
| **Sitarail** | Cote d'Ivoire – Burkina Faso | 1995 | | | |
| **Camrail** | Cameroon | 1999 | | | |
| **CEAR** | Malawi | 2000 | | | |
| **RSZ** | Zambia | 2002 | | | ☐ |
| **Madarail** | Madagascar | 2003 | | | |
| **Transrail** | Senegal, Mali | 2003 | | | |
| **CCFB** | Mozambique | 2005 | | | ☐ |
| **Transgabonais** | Gabon | 2005 | | | |
| **Nacala** | Mozambique | 2005 | | | |
| **KRC - URC** | Kenya - Uganda | 2006 | | | |
| **TRC** | Tanzania | 2007 | | | ☐ |
| **SNCC** | DR Congo | 2011 | | | |

| | |
|---|---|
| | Good |
| | Fair |
| | Poor |
| | Distress |

*Source: World Bank*

Such dismal performance is not unlikely related to the high risk profile of rail infrastructure. In particular the construction risk and the demand risk are above average for the transport infrastructure. Research has illustrated that actual costs for rail projects are on average 45% higher than the estimated costs and actual traffic 39% lower than its estimate. Deviations are significantly higher than for example the case with toll roads.

Figure 14: Main Risks Railways versus Roads




*Source: Bent Flyvbjerg: Megaprojects and Risks (2003)*

Consequently it is of the utmost importance that railway projects are well prepared including a detailed analysis of all the risks and uncertainties and according assessment of contingencies in the cost estimates and traffic forecasts.

The manner of private sector participation in the management and financing of railways is driven to a large extent by the way the sector is organized. This varies per country though in general some common systems can be identified as illustrated by the following country examples[4]:

(i) Australia, which is also a large, sparsely populated country with considerable mining, and has adopted an open access model allowing carriers to use both state and privately owned infrastructure.
(ii) The European Union, which allows open access for carriers in most markets. For freight, it is well advanced in many countries. Private sector participation is usually limited to rolling stock ownership and operations.
(iii) Kazakhstan, which has also adopted an open access model for wagons, and, like Australia, is a large, sparsely populated country with considerable mining.
(iv) North America, where freight railways are all privately owned and provide access to each other in certain circumstances.
(v) The Russian Federation, which has adopted an open access model for operators but not carriers. Private sector participation is usually limited to wagon ownership and operations.

### (i) *Australia*

Railways in Australia were originally built as separate rail networks in each state, often using different track gauges. Several years of reform resulted in a national network with a mixture of public and private ownership. Most public rail networks are still owned by provincial governments, but some provincial rail networks are now managed by the national infrastructure manager. Australia also has private railways linking coal and iron ore mines to ports. There are about 10 freight carriers of significant size and about the same number of infrastructure managers for freight. Most networks are interconnected with other networks.

The Australian Constitution provides all parties with access to strategic assets. Railway infrastructure was designated as a strategic asset in the 1980s. This has transformed the Australian rail sector. Australia has introduced open access for freight railways built for common use, even if these are in private ownership. For example, the Australian Competition Tribunal in 2010 decided that third parties should be allowed to use some of the lines owned by two major iron ore companies. The third parties would, in practice, be smaller mining companies for whom it would not be economical to build their own lines. The tribunal did not, however, require open access for other rail lines owned by big mining companies.

Some railways have vertical separation of infrastructure[5], while others have retained vertical integration. The isolated mining railways discussed above, however, remain vertically integrated. Most carriers and some infrastructure owners are in private sector ownership.

Infrastructure charges vary between infrastructure managers and lines/trains, but there are common rules:

(i) Discrimination is not allowed—infrastructure companies must charge the same for the same service.
(ii) Charges can vary between an established floor (based on marginal cost) and an established ceiling (based on total cost).
(iii) Within this range, rates may be negotiated.

[4] Asian Development Bank; Managing for development results: Rail infrastructure tariffs—Enabling private sector development in Mongolia's railway sector (2014)

[5] Vertical separation of infrastructure is where the ownership and management of railway infrastructure is separate from the ownership and management of train operators.

### (ii) *European Union*

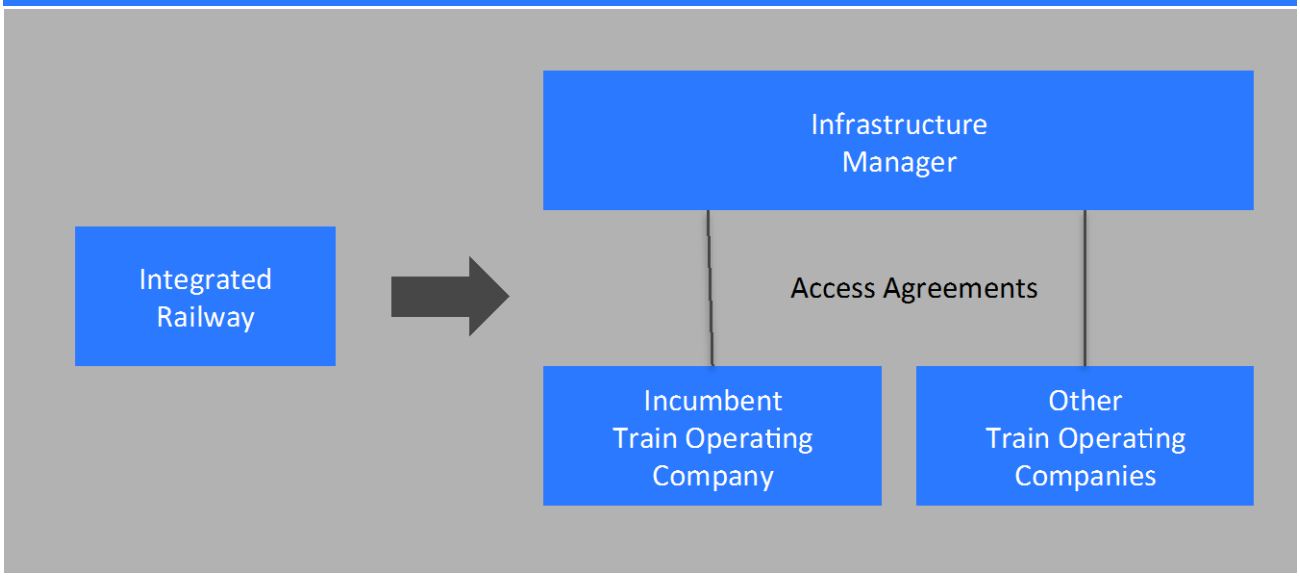
Railways in most of the EU are predominantly for passengers but, in some countries in Eastern Europe and Scandinavia, freight is also important. EU countries have traditionally had state-owned railways, although some countries also have privately owned industrial lines. Operational integration within each network is provided by the infrastructure manager. There is coordination at EU level on technical standards and corridor development, but not on operational planning and control.

All EU countries are required by common agreement to provide open access to new rail carriers (using their own locomotives and wagons) that provide freight and international passenger services. The EU plans to liberalize domestic passenger services and some countries have already done so.

To ensure that there is no discrimination in favor of national operating companies, the following requirements are in place:

(i) All countries are required to set up infrastructure entities with decision-making powers that are independent of any carrier using that infrastructure.
(ii) Some countries have set up completely separate infrastructure companies. Where they have been separated in this way, infrastructure companies have, except temporarily in the United Kingdom (UK), remained under state ownership.
(iii) Some countries have privatized freight companies and franchised passenger services—others are planning to do so.

Figure 15: Vertical Separation Structure of Railways




*Source: ADB*

Vertical separation may be within a holding company, as in Germany where the infrastructure company and national carriers (one for each market sector) are subsidiaries of the holding company. Some countries, including all three Baltic states (Estonia, Latvia, and Lithuania), have established state-owned holding companies with infrastructure and operating subsidiaries.

Most countries in the EU have made reforms in line with the requirements set out in the EU law (which applies to all member states). New companies entering the market include both national carriers from

other countries in the EU and private companies. The number of companies with freight licenses is less than 25 in most countries but over 300 in Germany, though not all of these actually provide services.

Evidence is unclear on the impact complete vertical separation (companies under completely different ownership) has on competition and growth. The key issue is how the complex relationship between infrastructure and operating companies is managed. Countries that have open access have experienced faster traffic growth than those that have not.

Almost all railway infrastructure in Europe is state owned and managed. In the UK, infrastructure was privatized in 1996, but private ownership of infrastructure was abandoned in 2001, mainly because of the difficulty of aligning the incentives of private infrastructure owners with state policy and the commercial requirements of carriers. In Estonia, private ownership was also introduced but abandoned in 2004 partly because the access charging policy provided inadequate returns to investors.

New line construction is largely limited to high-speed lines in Western Europe, and attempts to build these using public–private partnerships have met with limited success so far because they are rarely profitable and it is difficult to separate the revenue streams of these new lines from those of the existing network to which they are usually connected.

Every country in the EU is required to establish a regulatory body that is independent of both the railway industry and government. Independent regulation is important to give new entrants confidence that the rules will not be changed by government in response to political expediency. The regulatory body sets rules to ensure that the overall national system works efficiently and fairly. To retain their licenses, all entities in the industry must abide by these rules. The precise role of the regulatory body differs between countries, but a key function under open access arrangements is to ensure that access to infrastructure is provided under arrangements that are nondiscriminatory and do not favor the national carrier.

Infrastructure tariffs—also referred to as access charges—constitute what the infrastructure manager charges carriers to use the track, stations, depots, and other facilities. According to EU rules, these must cover at least the marginal costs of providing and operating the infrastructure and related services (such as dispatching, train inspection) and may in addition include a mark-up to reflect different railway market sectors' ability to pay. In practice, many countries, particularly in Eastern Europe, do not differentiate charges between market sectors, and this may have contributed to traffic decline in markets with limited ability to pay.

Another requirement in the EU is that passenger and freight be established as separate businesses where they remain within the national carrier. This is particularly important in Eastern Europe where profits from freight have in the past been used extensively to cross-subsidize passenger services. Such cross-subsidies are no longer permitted under EU rules.

### (iii) *Kazakhstan*

Kazakhstan, like Mongolia, is a large, sparsely populated country with an important mining sector.

Railways are therefore essential for the economy. Kazakhstan has made considerable progress in reforming its railways over the years. Social activities, such as schools, have been transferred to local authorities. Noncore service functions, such as several repair and maintenance companies, have been separated and some have been sold. Although contracts were established with private repair and maintenance service suppliers, and a market is beginning to develop, there have been problems with cost escalation because some specialized private suppliers exploit their local monopoly power. Some monopolies are due to high barriers to entry caused by long distances.

Since 2003, Kazakhstan Railways (KTZ) has been selling older surplus freight wagons to private companies. These private companies have refurbished these wagons and bought new ones. The wagons are used both for own-account operations and leased to third parties. Private wagon owners were operating about 40% of the national fleet by 2006.

The structure of the railway sector in Kazakhstan, as proposed in 2004, included the separation of loss-making enterprises from the core business (the core business being directly under the Ministry of Transport and Communications (MTC), and other enterprises to be privatized or transferred to local authorities.

Under the 2004 plans, the activities of the headquarters of KTZ would be limited to managing the main line network. KTZ would still own 100% of the joint-stock companies responsible for core railway activities including KTZ's locomotive subsidiary (responsible for provision of locomotives and drivers) and its subsidiary Kaztemirtrans, which is now responsible for the provision of wagons and will eventually be the freight carrier. It has now been decided that KTZ's locomotive subsidiary will be part of Kaztemirtrans.

Less progress has been made with private sector purchase of locomotives. Private companies appear to be reluctant to purchase locomotives and operate their own services due to the greater inherent risks and the perception of inadequate incentives provided by the tariff structure (i.e., they consider it cheaper and easier to use locomotives and drivers provided by "KTZ Locomotive"). The development of competition is also limited by the absence of clear rules defining the terms on which access to infrastructure can be provided.

One aim of the program was to resolve the issue of subsidies for passenger train operations by transferring ownership, along with operating and funding responsibilities for these services, to MTC and the oblasts (regional governments). KTZ would provide access to track and KTZ Locomotive would provide locomotives to passenger carriers. There would no longer be a need for cross-subsidies from KTZ freight operations to support passenger operations. This process has been delayed.

JSC Transport Services Center was formed from KTZ to own, maintain, and operate most multi-user branch lines but not to act as a carrier. These multi-user branch lines typically connect single-user branch lines (owned by local industrial companies) to the main line. Most single-user branch lines and some multi-user ones have been sold, but the sale of multi-user ones has now been abandoned due to the risks of creating local monopolies.

As in the Russian Federation, tariffs are still calculated on the basis of Tariff 10-01, and total regulated tariffs have been separated into their component parts (infrastructure, locomotive traction, and wagons). Shippers therefore receive a discount for using their own wagons.

Generally, the less controversial and simpler reforms, such as the separation and sale of noncore activities, were completed quickly and private ownership of wagons has grown rapidly. Progress is slower in the other more difficult areas, particularly the transfer of passenger services to MTC and vertical separation of infrastructure to Kaztemirtrans (moving the national freight carrier from KTZ, which also manages infrastructure).

### (iv) *North America*

The freight railways of the United States (US) consist of seven large Class I railways (including two Canadian-based railways that operate in the US) and several hundred smaller railways (mainly short lines connecting industries to the Class I railways). The freight railway industry in Canada has a similar structure with two major national vertically integrated railways. There is coordination at the national level on technical standards but not on operational planning and control: each railway is responsible for its own network and coordinates with other railways at boundaries.

All railways in North America are vertically integrated, as they used to be in all countries in the world and still are in most. Competition in freight is provided by overlapping rail networks, other modes of transport, and source competition. Freight railways in North America are privately owned, and ownership crosses international frontiers. Passenger railways are all loss making and are publicly owned.

To give investors in private and largely unsubsidized freight railways the best chance of recovering their costs and to ensure that there are adequate incentives to invest, they are not required to provide open access. Third party access (known in the US as trackage rights) is sometimes permitted but is not automatically available by law to all licensed carriers. The terms of access, including infrastructure charges, are usually negotiated between the railways buying and selling access rights and generally remain confidential. Trackage rights access may also be imposed by the regulator: for example, as a condition of a merger or if a shipper complains about abuse of monopoly power.

In North America, more than 60% of the freight wagon fleet is not owned by the railways themselves but by shippers or leasing companies (compared with 50% in the Russian Federation and 30% in the EU). However, these wagons are exclusively hauled by railway companies. All wagons used in North America must meet technical standards developed by a joint industry committee and can be used throughout the entire network.

In Mexico, during the 1990s, the national railway was broken up into three (later four) major independent vertically integrated railways and sold. In each privatized railway, one of the conditions of sale was to provide access to a competing railway over part of the network. This was to ensure that there was competitive service to major industries or areas of production. Two of the concessions involved investors from US railways, which facilitated cross-border operations.

### (v) *Russia*

Railways in the Russian Federation are potentially less dependent on the government for regulation and financial support than in the EU because passenger services are relatively less important.

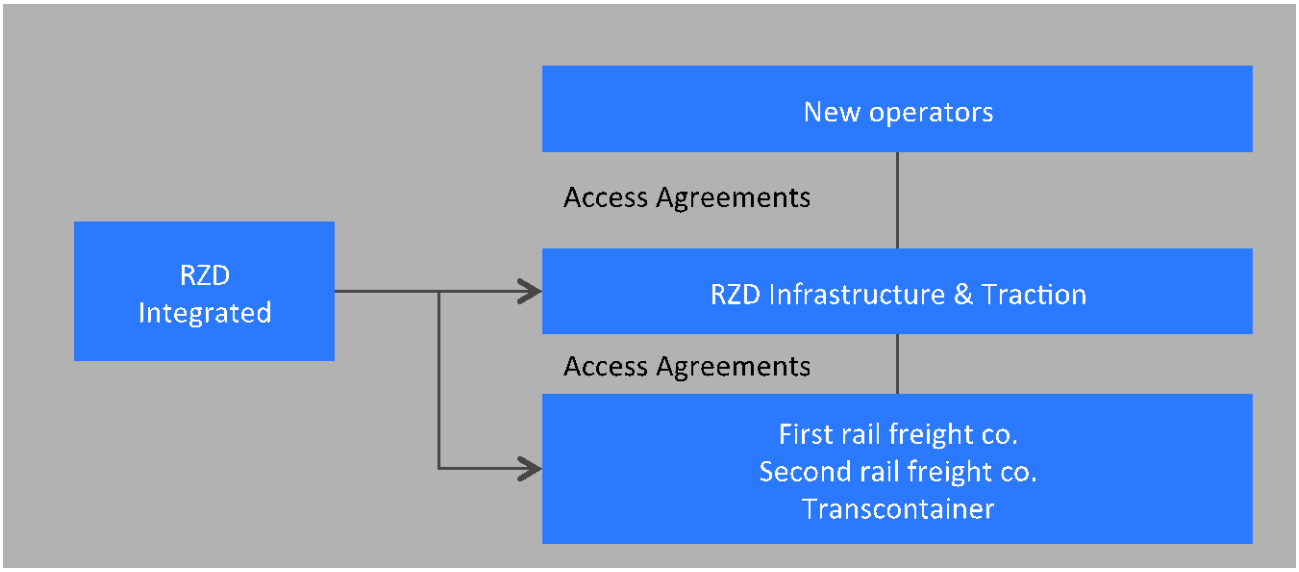
Russian reforms were based on a similar premise to the EU: that competition between rail service providers operating over the same infrastructure should improve efficiency. Competition between rail service providers is more necessary in the Russian Federation than in the EU because there is less competition from roads, especially east of the Urals. An additional objective of reforms in the Russian Federation was to attract much-needed investment in rolling stock from the private sector.

Although the original government plan was to allow private carriers providing their own traction (locomotives and drivers) as well as wagons, so far access has generally only been permitted to operators using their own wagons. Operators are not allowed to use their own traction except for some block trains where there is a shortage of Russian Railways (RZD) locomotives. These reforms have been accompanied by the development of a competitive wagon leasing market with both shippers and operators purchasing their own freight wagons or leasing them from newly formed specialized private leasing companies.

Both infrastructure and traction are therefore treated like legal monopolies and provided by RZD. RZD has opposed allowing private companies to provide their own traction as it considers there would be a loss of efficiency and that new carriers would take away the most profitable traffic, leaving RZD to carry out its “common carrier” obligations such as carrying domestic coal at discounted tariffs. RZD insists that any new carrier should be a common carrier. So far, the government has not insisted on allowing private companies to provide their own traction.

RZD has also established several freight operating subsidiaries to which it has transferred nearly all its wagons. These include two subsidiaries with about 225,000 wagons each, providing the full range of services across the country. It has also created some subsidiaries to serve niche markets, such as TransContainer which runs intermodal services. These subsidiaries are being privatized to raise money for RZD to invest in infrastructure. The restructuring is summarized in Figure 2.

Figure 16: Partial Separation of Infrastructure in Russia




*Source: ADB*

Profits from freight have been used to cross-subsidize loss-making passenger services. In 2006, RZD formed a Rail Passenger Directorate to focus on the management of long-distance passenger services.

Local passenger entities (divisions of RZD or subsidiaries in joint ventures with municipalities) are also being created for local transport. RZD has made progress in obtaining support from federal and local governments to compensate it for loss-making suburban and long-distance services. The need for cross-subsidy from freight is therefore reducing.

In the Russian Federation, regulated tariffs have been separated into three component parts: infrastructure services, locomotive ownership and services, and wagon ownership. Shippers who provide their own wagons do not pay the wagon component of the tariff. The wagon component was designed to reflect broadly the costs of wagons (to ensure fair competition between RZD and private operators during the transition to operator-provided wagons). The wagon component is set quite low for some commodities, and this gives little incentive for private operators to provide their own wagons. The combined infrastructure and traction charge is the difference between a total tariff, based on distance and a broad commodity value classification, and an approximation of wagon costs. Infrastructure and locomotive tariff components therefore bear little relationship to costs. This reduces the effectiveness of competition in raising efficiency.

Reforms in the Russian Federation have been reasonably successful. In 2008, there were about 2,000 registered railway companies and freight forwarders, though some with only a few wagons.

There has been about USD30 billion of private investment in about 500,000 wagons—almost half the total fleet. The remarkable growth of private wagon ownership can partly be attributed to the shortage of RZD wagons and the fact that private wagons are generally much newer than those owned by RZD subsidiaries and use newer technology. Most of the private wagons are used to carry more profitable high-value

commodities, such as oil and oil products, in tank cars. Private wagon operators often serve niche markets and charge more than RZD.

The private fleet has helped railway capacity keep pace with growth in demand resulting from the Russian Federation's expanding economy. It has also helped improve the quality of service. However, far more investment is needed and, even with extra government funding, RZD may not have the sufficient resources for investment without greater involvement of the private sector. The government is now considering private locomotive ownership.

The government's 2008 Strategy for Developing Rail Transport in the Russian Federation up to 2030 also places emphasis on public–private partnerships in infrastructure, including high-speed lines.

#### (vi) *Mongolia*

Until recently, the only railway carrier in Mongolia was the Ulaanbaatar Railways (UBTZ), which is jointly owned by the governments of Mongolia and the Russian Federation. With the development of the mining sector, the railway market is changing, new private railway companies have been established, and several major proposed railway investments are planned.

The State Policy on Railway Transportation was adopted by the Mongolian Parliament in 2010. This policy establishes the context for the liberalization of the railway freight market including the modernization of its regulatory framework. A key part of the new regulatory framework is to allow any qualified train operator to use any railway infrastructure, i.e. "open access," and to charge the operators infrastructure tariffs for the right to operate.

**In conclusion, railway projects are suitable for private financing albeit that the complexity is not to be underestimated. It is questionable whether integrated BOT models are the most appropriate mode of PPP in the GTI region given:**

- **(i) The integrated railway network in the GTR implying that there are essentially no single dedicated freight railway lines;**
- **(ii) The 'open access' regime in Mongolia, implying a segregation between an infrastructure manager and train operating companies;**
- **(iii) The limited successful experiences with integrated railway BOT concessions, which tend to be only viable for dedicating mining railways;**

**Consequently it is recommended to focus on BOT concessions for railway infrastructure (excluding rolling stock and train operations) with cost recovery based on income from track access charges. Should income from track access charges not sufficient or highly uncertain it could be considered to allocate the demand risk to the railway company and or government and reimburse the concessionaire through annuity payments.**

## 5.2 Roads

The objective of this section is to present recent trends and possible models for using private finance to develop roads being another dominant mode of infrastructure in the GTI transport investment program. The possible models for private finance are to a large extent driven by the cost recovery mechanism as illustrated by some comparative country reviews.

Roads are by far the dominant mode of transport infrastructure using PPP. The PPI database 1990 – 2012 has identified in total some 811 road projects that involve some level of private finance out of the 1,475

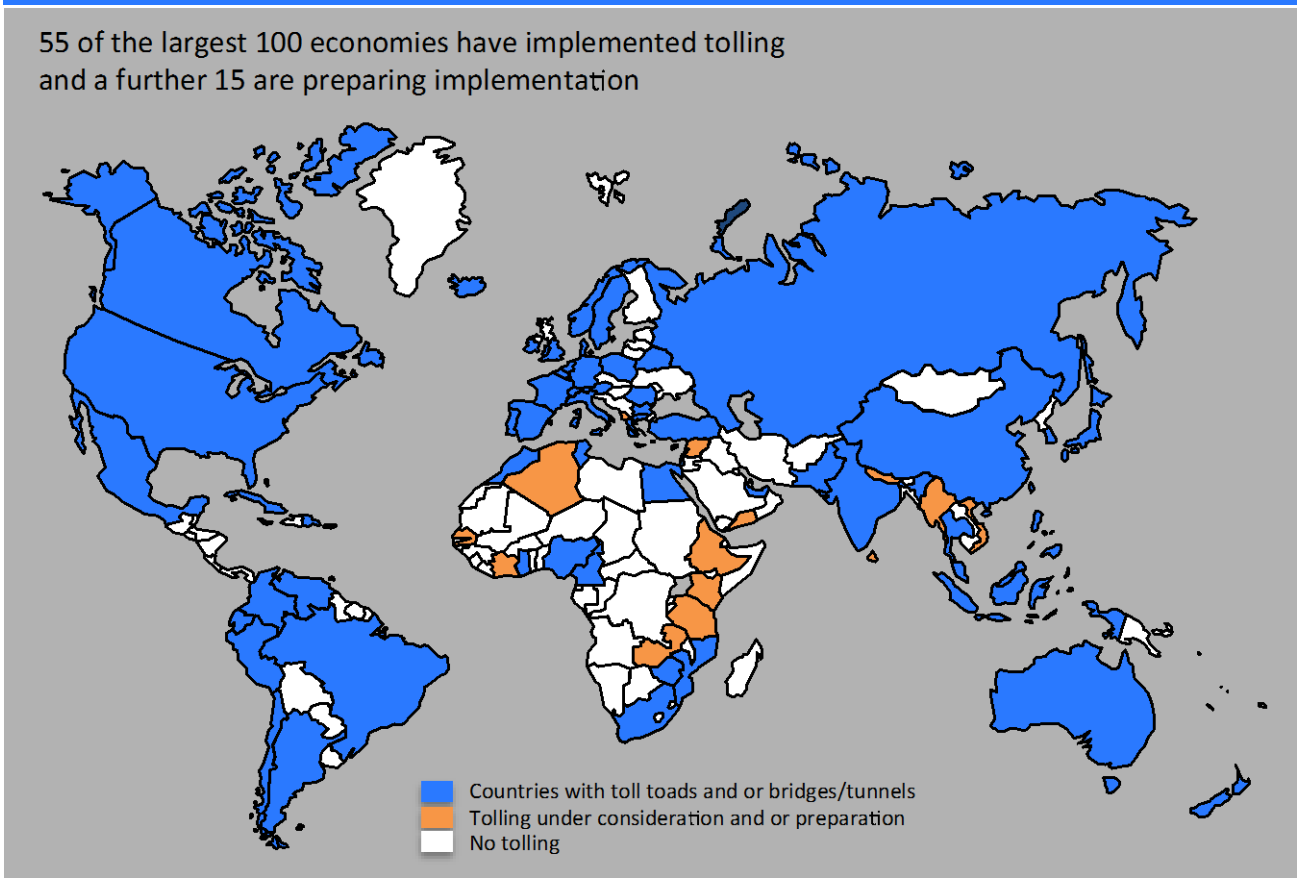
transport projects i.e. 55%. Rail accounts for 8%, airports 11% and ports 26%. In India and ROK, two of the most matured PPP markets worldwide, the vast majority of the hundreds of PPP projects implemented in the past decade are road projects.

For privately financed road infrastructure development including rehabilitation the most distinctive feature is the cost recovery mechanism. The basic cost recovery options are:

1. ***User charges.*** The user is charged a fee for the use of the infrastructure. In case of roads this fee is commonly referred to as 'tolls'.
2. ***Shadow tolls.*** Shadow tolls are periodic payments from a public authority to the private company based on the actual usage of the infrastructure.
3. ***Unitary payments.*** Unitary payments are periodic payments upon operations from a public authority to the private company. There are various options to define these payments; the most common option is *availability or annuity payment* whereby the payment is based on the level of availability of the infrastructure. Alternatively the payment scheme could also be defined through so called Output and Performance Road Contracting (OPRC) principles. Annuity based PPPs in the road sector are mainly applied in Europe (approximately 28% of the implemented road PPPs in Europe was based on availability payments) and India.

Of the 100 largest economies, 55% has already introduced to more or lesser extent real tolls (including public tolling) and a further 15 % is considering it[6].

Figure 17: Overview Toll Roads Worldwide




*Source: VandenBroek Consulting 2012*

[6] Source: VandenBroek Consulting, 2012

Research illustrates that the major part of privately financed road infrastructure applies real tolls to recover part or all of the costs. In Europe some 60-70% of the road PPPs was based on real tolls, 25 – 30% availability payments and 5 – 10% shadow tolls[7].

Consequently, there are essentially two basic PPP models for road projects involving capital investments:

(i) Design Build Finance Operate contracts
(ii) Design Build Finance Maintain contracts

(i) *Design Build Finance Operate*

The best known PPP arrangement is a Design Build Finance and Operate (DBFO) arrangement also known as a Build Operate Transfer (BOT) arrangement. This arrangement implies that a private company is responsible for the design, construction, financing and the operations of infrastructure for a given period of time. Operations include the right (concession) to charge users a fee for the use of the infrastructure. For road infrastructure this will normally be done through tolls. For rail infrastructure this will be commonly done through track access charges.

(ii) *Design Build Finance Maintain*

If the PPP arrangement does not include the right to levy and retain user charges, the arrangement is commonly referred to as a Design Build Finance Maintain (DBFM) arrangement. This arrangement implies that a private company is responsible for the design, construction, financing and maintenance of infrastructure for a given period of time. The costs are reimbursed by the public authority based on a predefined payment schedule (availability payments or shadow tolls).

The different cost recovery mechanisms differ significant in their cash flow profiles for both the private as the private sector. Whereas upon public delivery the government reimburses almost immediately the costs made by a private contractor for building the road and maintaining it, upon BOT the private company is to receive its income from user fees i.e. tolls. Depending on the financial appraisal he will be able to either pay a concession fee if he expects income to exceed his costs or require a subsidy often referred to a viability gap financing (VGF) if he expects income from user charges to be insufficient to recover costs.

In case of *availability (or unitary) payments*, revenues for the private company are fixed as they do not depend on the actual intensity of infrastructure use. Therefore, the private sector faces no demand risk.

In case of *shadow tolls*, the income for the private sector depends on the actual infrastructure use. Therefore, the private company does incur demand risk. Since users have access to the infrastructure 'free of charge', the demand risk is predominantly related to the uncertainty of traffic forecasts (these are mainly driven by macro and regional economic conditions and do not include the uncertainty on the user's willingness to pay).

The use of *shadow tolls* should be carefully considered. Shadow tolls impose demand risk on the private company. This risk is only to a marginal extent within the control of the company. Normally when a company is subject to demand risk, and when demand turns out to be less than expected, the company will try to increase revenues. This may be achieved through revising pricing strategies or by increasing its marketing efforts. However in the case of a road with shadow toll, there is no direct pricing and traffic will only be influenced marginally by extra marketing efforts. In this case, traffic volumes are determined only by macro and regional economic conditions.

[7] Source: ECORYS Research & Consulting, Infranews based on review of closed PPP transactions in 2005 - 2007

The fact that the company is exposed to demand risk, which it does not control will be priced accordingly at the beginning of the PPP contract. Shadow tolls also impose demand risk on the public sector. After all, the contracting authority faces uncertain expenditures because payments to the private company may increase or decrease over time because of traffic growth or decline.

In case *of real tolls* the demand risk is related to the macro and regional economic conditions and to the user's 'willingness to pay'. The 'willingness to pay' will depend on the benefits of the infrastructure to the respective users. An important benefit to consider is (value of) time. For example: the freight traffic business values time dearly (time is money in freight transport). Therefore, if a freight transport operator has limited alternatives for transporting goods from A to B, the operator is probably willing to pay a fee for the use of infrastructure, if it saves time. However, a leisure traveller will value time gains and losses less. Therefore, if the leisure traveller has other alternatives (e.g. other means of transportation or a different road) to arrive at his destination, he will be less willing to pay a fee for infrastructure use.

The use of *real tolls* does not automatically imply that demand risk is transferred to the private company. Following negotiations between the public authority and the private company, the public authority may offer to mitigate the company's demand risk by providing guarantees. This will reduce the risk profile for the private company and consequently reduce its cost of capital, hence improving the financial performance of the project. However, the use of guarantees also has a cost, which the public sector needs to consider. Demand risk will be allocated to the public sector when the private company collects the tolls on behalf of the government. The private company will then transfer the collected revenues to the public authorities.

International experiences indicate that using PPP for road development has mixed results as illustrated by the following examples:

(i) Portugal
(ii) Spain
(iii) United Kingdom
(iv) Mexico
(v) India

### (i) *Portugal*

In 1972, the first concession for a tolled motorway was granted with the creation of the private company Brisa. Following the 1974 Carnation Revolution, however, the government took majority ownership of Brisa, effectively making it a state-owned enterprise. Until the 1990s, Brisa was the sole motorway concessionaire in Portugal. During this decade, the Portuguese government decided to privatize Brisa and increase the number of private companies participating in highway infrastructure concessions to promote competition and industry development. Since then, the Portuguese government has used PPPs extensively to develop and manage its National Motorway System. A key driver of the decision to implement PPP arrangements in earnest was compliance with European Union (EU) convergence criteria, which places limits on public debt and budget deficits. This pressure makes the use of PPPs, in which the private partner assumes real risk, quite attractive because its associated debt is moved off the public sector's balance sheet. Other drivers cited include the following:

- Make public funds available for investment in other areas.
- Facilitate execution of the National Road Plan.
- Improve public safety.
- Increase private sector capacity and competition.

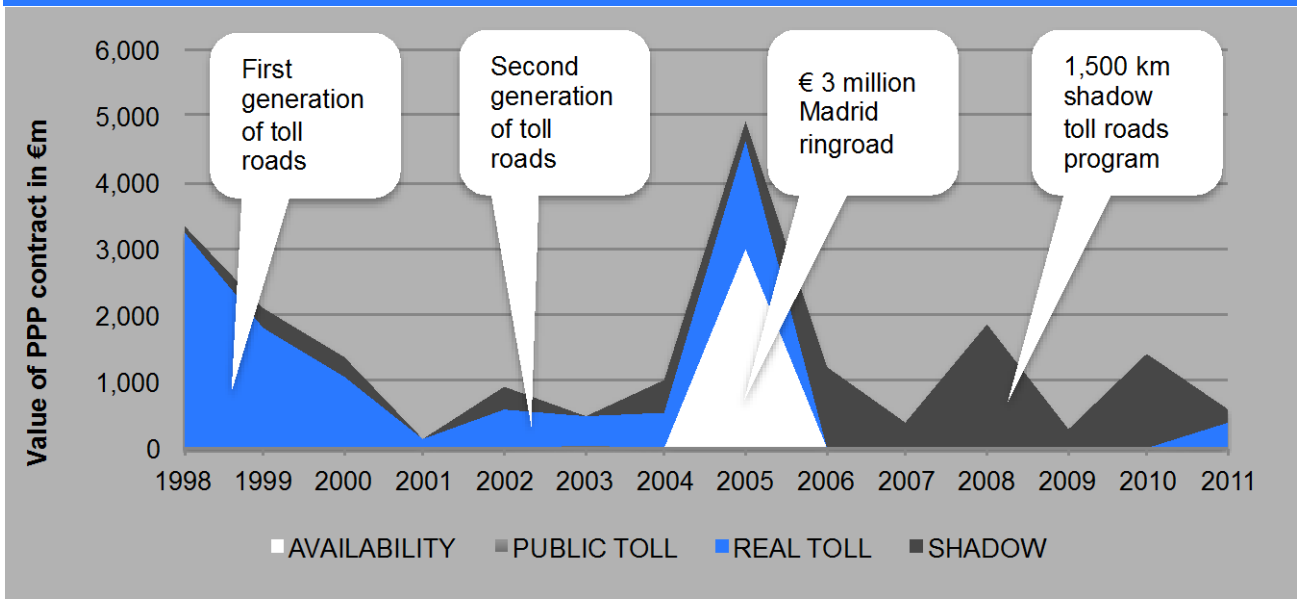
### (ii) *Spain*

Private sector involvement in developing and managing highway infrastructure in Spain dates to 1960. At that time, the concession for the Guadarrama Tunnel was granted, based on legislation passed in 1953 allowing private entities to construct tollways for a maximum term of 75 years. New legislation was passed in 1960 to grant the public sector more flexibility in concession arrangements to improve their attractiveness to the private sector. Two concessions were quickly granted under this framework: the Cádiz Bay Bridge, toll-free since 1982, and the Cadí Tunnel, now operated by the Autonomous Community of Catalonia.(b) In 1964, Spain developed a plan for a National Expressway System, which projected the construction of about 3,000 kilometers (km) of expressways by 1980. Subsequently, several concessions were established to begin development of this system. To facilitate rapid construction, specific legislation was passed for each concession, and in many cases, beneficial terms were granted to the private developers. In 1972, Spain recognized the need for a general legal and regulatory framework to serve as the foundation for future concession arrangements. Building on its own experience as well as that of other countries, Spain passed Law 8/1972 to provide this basis. It served this purpose until 2003, when Law 13/2003 modified the original framework to accommodate contemporary circumstances and practices such as the clarification of the allocation of concession risks. Law 30/2007 was also enacted recently to address all public sector contracts, but it has a section for contracts for public works concessions.

Similar to Portugal, the resurgence of PPP activity in Spain is driven by EU convergence criteria. The other principal driver cited was that the nation's infrastructure requirements exceed its public funding capacity. One public official's opinion on PPPs is that these arrangements are primarily tools to develop infrastructure, and the approach is no better or worse than any other.

Although real tolls is the dominant cost recovery mechanism, Spain also applied alternative cost recovery mechanism such as shadow tolls and availability payments.

Figure 18: Development Road PPP in Spain




*Source: Infra-news adapted by consultant*

The reduced appetite for real toll PPPs is predominantly driven by the economic crisis that has impacted Spain significantly and has already led to some road PPP bankruptcies.

Textbox

**First Spanish Road Concessionaire Files For Bankruptcy**

The concessionaire of the Madrid-Toledo highway (AP-41) has become the first of Spain's troubled road concessionaires to file for bankruptcy.

The AP-41 concessionaire is one of several concessionaires whose revenues have been hit by lower-than-expected traffic levels and soaring land expropriation costs.

*Source: Infranews 14 May 2012*

### (iii) *United Kingdom*

Increased private participation in infrastructure provision and management began in the United Kingdom in the 1980s. The momentum from this decade continued into the following one when in 1992 the national government began the Private Finance Initiative (PFI). Her Majesty's (HM) Treasury issued and has administered the policy since its inception. To some, the terms PFI and PPP are synonymous. PFI, however, is a specific U.K. policy to increase private participation in infrastructure financing and provision, which obviously generated various PFI programs in the United Kingdom. Total PFI activity to date approaches £60 billion. The first three highway PPPs were concession arrangements—Queen Elizabeth II Bridge, Second Severn Crossing, and M6 Toll—with real tolls used to secure the private financing. Beginning in 1996, new PPP contracts eliminated real tolls and made road use free at the point of use to drivers. Consequently, PPP contractors have secured financing for capital costs while the government has paid PPP contractor service charges from budgetary funds. Original drivers of the PFI policy include the following:

- An infrastructure deficit, created by years of underinvestment, which exceeded available public sector funding
- Dissatisfaction with the results of conventional construction contracts (cost overruns, schedule slippage, high asset life-cycle costs)
- Desire to transfer more of the risk to the private sector
- Desire to get better value for public sector expenditures

Unlike Portugal and Spain, the United Kingdom is not part of the Eurozone, so it is not bound to meet EU convergence criteria. Thus, the pressure to move liabilities off the public sector balance sheet is a less urgent issue.

### (iv) *Mexico*

In the same spirit of privatization that swept through Mexico in the early 1990's, the government decided to increase the road network by authorizing the sale of toll road concessions to privately owned Mexican companies.

Between 1989 and 1994, USD 13 billion were invested in the Mexican Private Toll Road Program. The program awarded 53 concessions for the construction, operation and collection of tolls of approximately 5,500 km of roads. By 1995, 44 were in full or partial operation, representing over 90% of the total kilometers of the concessions. The investment was financed by local commercial bank debt, concessionaire equity and federal and state government grants and equity contributions.

The concessions were originally granted for a period of 15 years, but later extended to 30 years, and specified the work to be undertaken, operational standards, required maintenance, fees payable to the government and the tolls to be charged. Upon termination of the concession, the right to operate and

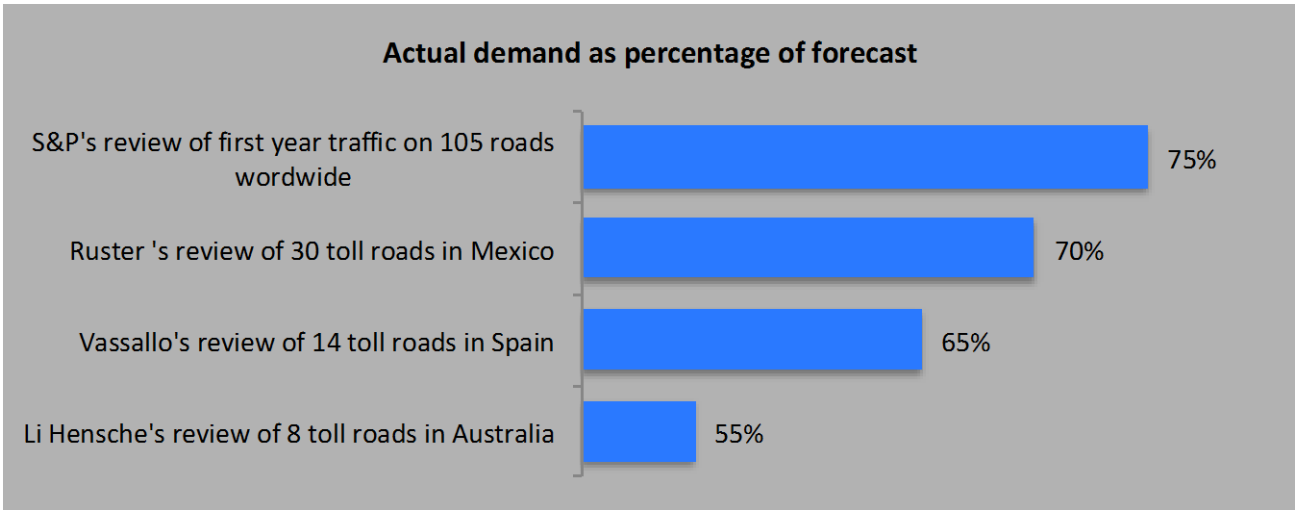
collect tolls would return to the government, nonetheless, the ownership of the project remained in government hands throughout the term of the concession. In order to reduce risk to the concession-holders, the government guaranteed a minimum usage level on the new highways[8].

However, a combination of macroeconomic and project-specific factors, including the Mexican Peso crisis of December 1994 and miscalculation of investment costs and operating income, led to an unsustainable set of operating conditions. By 1997, the government cancelled 23 of the 53 concessions, recovering the right to operate, maintain and exploit these roads, while absorbing USD 7.3 billion in bank loans and short-term borrowings. The scale of buying out the combined debt and taking over the roads for all 23 concessionaires was so large that it represented 1% of the national debt and required its own government organization to manage.

Among the main factors that affected the viability of the program were the frequent cost overruns and construction delays. Information deficiencies, problems with securing right of way, unanticipated design changes, local community resistance, among others, resulted in an increase in the average cost per kilometer of new highway from $1.7 million to $2.8 million. In addition, traffic shortfalls and higher than expected operations and maintenance expenditures caused the actual project revenues to be on average 30% below the original estimates. Carlos Ruiz Sacristan, former Communications and Transport Minister, admitted that the government's estimates of traffic and revenue flows were overly optimistic:" Some started falling behind in 1993 and 1994", he explained. "Then with the crisis in 1995 and 1996, things only got worse." [9]

It is to be noted that Mexico is not an exception in this respect. Optimism bias in traffic forecast is more common than uncommon as illustrated by international research.

Figure 19: Demand risk in toll roads




*Source: Vassallo 2007, Standards & Poor 2005, Li & Hensche 2009, Ruster 1997*

The financial structure of the projects also contributed to their downfall. High debt to value ratios in combination with short-term commercial bank loans characterized by high floating interest rates further hampered the profitability of the projects.

[8] According to the Ministry of Communications and Transport (SCT) this practice has been eliminated. After the Peso crisis, commercial and public transport fell dramatically and toll receipts averaged 4 billion, about half of those of 1989, leaving the government with a formal obligation to losing concession holders.

[9] Laura Carlsen, "Highway Rescue or Highway Robbery," *Business Mexico,* October 1997

The Ministry of Communications and Transport also blamed the poor performance of the concessions on the high tolls charged to motorists, redirecting traffic flows from the toll roads to parallel freeways and back roads[10]. Faced with crushing debt estimates and diminishing traffic flows during the 1995 recession, the concessionaires kept the tolls high in an attempt to recover their investment. After the government bailout in 1997, tolls on the newly stated-owned highways were reduced and average of 17% for cars, 27% for buses and 37% for commercial trucking. As a result, traffic in the 23 highways increased on average 21.1% for cars, 15% for buses and 39.5% for commercial trucks during the first two quarters of 1998 when compared to the same period in 1997. President Ernesto Zedillo referred to these actions during his 1997-98 Union Address: "With these, the government is meeting its objectives of guaranteeing the optimal maintenance of the infrastructure recovered and increasing its utilization for the benefit of a larger number of users."

A good example of the problematic of toll road concessions is the Cuernavaca-Acapulco turnpike included in the bailout package. Poor planning and inaccurate costing estimates inflated the project budget of the *Autopista del Sol*, as it is know, by 275%[11]. To make matters worse, steep tariffs explain a road free of any congestion. At 8.25 US cents per kilometer, tolls for this road are about five times higher than comparable turnpikes in the United States

### (v) *India*

National highways in India are the arterial roads that run through the width and breadth of the country connecting state capitals, ports, industrial and tourist centers, and adjacent countries. The National Highways, with a total length of 65,659 km, account for just 2% of the 3.3 million km road network, but carry 40% of the total traffic. In spite of the fact that National Highways have played a key role in the economic growth of the country, the Central Government has not been able to allocate sufficient budgetary resources to meet roadway needs due to competing demands from other sectors, especially the social sector. The Government of India, which has jurisdiction over the National Highways network regarding its development and maintenance, has sought the involvement of the private sector through the PPP route to meet the galloping resource requirements and overcome the inefficiencies in the traditional public procurement system.

The Central Government of India has undertaken the ambitious National Highways Development Program (NHDP) to upgrade the National Highways in seven phases. The Government of India in January 1999 formally launched NHDP to develop the Golden Quadrilateral network (the National Highways network connecting the four metro cities of Mumbai, Chennai, Kolkata, and Delhi) under NHDP Phase I and north–south and east–west (NSEW) corridors under NHDP Phase II. The National Highways Authority of India (NHAI) was mandated to implement this program, which was estimated to cost 540 billion Indian Rupee (in 1999 prices, approximately USD 12 billion). NHAI planned private sector participation in certain stretches of the National Highways network under the NHDP project and anticipated private investments to the tune of INR 40 billion (in 1999 prices). NHAI involved the private sector in the NHDP projects through the two PPP models: BOT (Toll) and BOT (Annuity).

The scope of NHDP has been further expanded when the Government of India included five more phases (i.e., NHDP Phase III to NHDP Phase VII) to the program under the government's ambitious plan to upgrade the National Highways in a phased manner in the period 2007–2012.

As per 2011 according to the PPP in India database, some 758 PPP projects have been awarded with a total value of Indian Rupee 3,833 billion (USD 85 billion). This includes some 416 road project i.e. 53% of all PPP

[10] Under the concession agreement, a parallel alternative to each highway was required.

[11] Andrew Watson, "The Road Ahead", *Business Mexico,* November 2002

projects. This makes India to the largest PPP market to date driven predominantly by the road PPPs and facilitated by an efficient and effective PPP framework. The PPP framework includes:

(i) **Policy Pillar**
   a. Periodic Five Year Plan clearly indicate PPP targets per sector
   b. Guidance is provided by Guidelines and Model Concession Agreements
   c. Various state level PPP Laws (Infrastructure Acts) or PPP policy statements

(ii) **Institutional Pillar**
   a. Department for Economic Affairs coordinates and support PPP
   b. Most States established PPP Cells
   c. PPP Approval Committee
   d. Panel of Transaction advisors for expert support
   e. Nationwide Training program developed

(iii) **Financial Pillar**
   a. India Infrastructure Development Fund for project preparation
   b. Viability Gap Fund
   c. Fiscal incentives
   d. India Infrastructure Finance Company Ltd providing long-term debt
   e. Several state specific funds to facilitate PPP

**In conclusion, roads are well suited for private financing through PPP as illustrated by the numerous international experiences. The critical question concerns, which cost recovery mechanism to apply, reflecting the allocation of demand risk. Most common cost recovery mechanism is tolling through a BOT arrangement. However, the consequent demand risk is not to be underestimated and may require government support through Minimum Revenue Guarantees (MRG) or Viability Gap Financing (VGF). Furthermore it is to be noted that road PPP could benefit significantly from standardization, which implies that it is advisable to develop road PPPs through a program and not as ad-hoc projects. The road projects in the GTI investment program are therefore recommended to be implemented as BOT concession supported where applicable with MRG and or VGF.**

## 5.3 Ports

The objective of this section is to present the options for private financing of port infrastructure and related services such as cargo handling.. It concludes that private financing options are strongly related to the way a port is organised.

A number of factors influence the way ports are organised, structured, and managed, including:

- The socioeconomic structure of a country (market economy, open borders)
- Historical developments (e.g. former colonial structure)
- Location of the port (urban area or in isolated regions)
- Types of cargo handled (liquid and dry bulk, general cargo, or containers)

Four main categories of ports have emerged over time, and they can be classified into four main models: the public service port, the tool port, the landlord port, and the fully privatized port or private service port.

These models are distinguished by how they differ with respect for such characteristics as:

- Public, private, or mixed provision of service
- Local, regional, or global orientation
- Ownership of infrastructure (including port land)

- Ownership of superstructure and equipment (particularly ship-to-shore handling equipment, sheds, and warehouses)
- Status of dock labour and management

Service and tool ports mainly focus on the realization of public interests. Landlord ports have a mixed character and aim to strike a balance between public (port authority) and private (port industry) interests. Fully privatized ports focus on private (shareholder) interests.

### (i) *Service Ports*

Service ports have a predominantly public character. The number of service ports is declining. Many former service ports are in transition towards a landlord port structure such as Colombo (Sri Lanka), Nhava Sheva (India), and Dar es Salaam (Tanzania). However some ports in developing countries are still managed according to the service model.

Under this model, the port authority offers the complete range of services required for the functioning of the seaport system. The port owns, maintains, and operates every available asset (fixed and mobile) and cargo handling activities are executed by labour employed directly by the port authority. Service ports are usually controlled by (or even part of) the ministry of transport (or communications) and the chairman (or director general) is a civil servant appointed by, or directly reporting to, the minister concerned.

Among the main functions of a service port is cargo handling activities. In some developing country ports the cargo handling activities are executed by a separate public entity often referred to as the cargo handling company. Such public companies usually report to the same ministry as the port authority.

To have public entities with different and sometimes conflicting interests reporting to the same ministry and forced to cooperate in the same operational environment constitutes a serious management challenge.

### (ii) *Tool Ports*

In the tool port model, the port authority owns, develops, and maintains the port infrastructure as well as the superstructure, including cargo handling equipment such as quay cranes and forklift trucks. The port authority's staff usually operates all equipment owned by the port authority.

Other cargo handling on board vessels as well as on the apron and on the quay is usually carried out by private cargo handling firms contracted by the shipping agents or other principals licensed by the port authority.

The Port of Chittagong (Bangladesh) is a typical example of the tool port. The Ports Autonomes in France are also examples, in particular the container terminals, which are managed and operated along the principles of the tool port, although for more recent terminals the private terminal operators have made the investment in gantry cranes. This arrangement has generated conflicts between port authority staff and terminal operators which has impeded operational efficiency.

The above-mentioned division of tasks within the tool port system clearly identifies the essential problem with this type of port management model - split operational responsibilities.

Whereas the port authority owns and operates the cargo handling equipment, the private cargo handling firm usually signs the cargo handling contract with the ship-owner or cargo owner. The cargo handling firm however, is not able to fully control the cargo handling operations itself. To prevent conflicts between cargo handling firms, some port authorities allow operators to use their own equipment (at which point it is

no longer a true tool port). The tool port has a number of similarities to the service port, both in terms of its public orientation and the way the port is financed.

Under a tool port model, the port authority makes land and superstructures available to cargo handling companies. In the past, these companies tended to be small, with few capital assets. Their costs were almost entirely variable. The cost of under-use of port facilities was usually absorbed by the port authority which minimized the risk for the cargo handling companies. Often, the provision of cargo handling services was spread over a large number of small companies with activity fragmented over many participants. The lack of capitalization of the cargo handling companies constituted a significant obstacle to the development of strong companies that could function efficiently in the port and be able to compete internationally.

However, with the above in mind, a tool port has advantages, particularly when it is used as a means of transition to a landlord port.

Using the tool port model as a catalyst for transition can be an attractive option in cases where the confidence of the private sector is not fully established and the investment risk is considered high. A tool port may mitigate this by reducing initial capital investment requirements.

Another example could include a government looking to expedite port reform initiatives where extensive time is required for legal statutes to be established. Laws and regulations for establishing a tool port may require less time to implement since no state assets are transferred to the private sector thereby making it an easier model to adopt in the first phase of reform.

### (iii) *Landlord Ports*

As noted, the landlord port is characterized by its mixed public-private orientation. Under this model, the port authority acts both as regulatory body and as landlord while port operations (especially cargo handling) are carried out by private companies. Examples of landlord ports are Rotterdam, Antwerp, New York, and since 1997, Singapore. Today, the landlord port is the dominant port model in larger and medium sized ports.

In the landlord port model, infrastructure is leased to private operating companies or to industries such as refineries, tank terminals, and chemical plants. The lease to be paid to the port authority is usually a fixed sum per square metre per year typically indexed to some measure of inflation.

The level of the lease amount is related to the initial preparation and construction costs (e.g. land reclamation and quay wall construction). The private port operators provide and maintain their own superstructure including buildings (offices, sheds, warehouses, container freight stations, workshops). They also purchase and install their own equipment on the terminal grounds as required by their business. In landlord ports, dock labour is employed by the private terminal operators, although in some ports part of the labour force may be provided through a port-wide labour pool system.

Potential lease partners for a port authority are:

- Terminal operators
- Cargo handling companies
- Dedicated terminal operators and shipping lines
- Forwarding agents
- Inland transport operators

Today it is increasingly common for shipping lines to lease terminals from port authorities. For these leases to succeed for all parties, however, two key conditions should exist:

- The shipping line lessee should generate a large volume of cargo at the port (i.e. it should be a major customer)
- The port should possess additional facilities of the same type leased to the shipping line to prevent creating a monopoly (i.e. a public access facility should be available).

If the port does not have other similar facilities (and other customers), the creation of a monopoly may conflict with the interests of both the port and the national economy. In this respect, the following points should be kept in mind:

- Shipping lines may at any point in time decrease, re-route, or altogether halt their services as a result of changes in financial conditions or shifts in patterns of trade. A well-known example of this is the cancellation of the round-the-world service of United States Lines in the 1980s.
- Shipping lines often merge or enter into cooperation agreements (alliances) with other shipping lines. Such practices may result in changing sailing schedules or the establishment of special ties with other ports.
- Shipping lines may reorganize their sailing schedules for reasons of internal policy.

Signing a lease contract with an operating company may be less risky than with a shipping line because the operating company usually does not rely on a contract with one single user but will spread the risks and safeguard its business interests by having contracts with several clients. In the case of a contract with a locally incorporated port operator, should a legal (contract) issue arise, it is generally easier to enforce liens and other measures needed to compel lease compliance than in the case of a company whose home base is in another country.

### (iv) *Fully Privatized Ports*

Fully privatized ports (which often take the form of a private service port) are few in number and are found mainly in the United Kingdom (UK) and New Zealand.

Full privatization is considered by many as an extreme form of port reform. It suggests that the State no longer has any meaningful involvement or public policy interest in the port sector.

In fully privatized ports, port land is privately owned, unlike the situation in other port management models. This requires the transfer of ownership of such land from the public to the private sector.

In addition, along with the sale of port land to private interests, some governments may simultaneously transfer the regulatory functions to private successor companies. For example, in the absence of a port regulator in the UK, privatized ports are essentially self-regulating. The risk in this type of arrangement is that port land can be sold or resold for non-port activities, thereby making it impossible to reclaim for its original maritime use. Moreover, there is also the possibility of land speculation, especially when port land is in or near a major city. Furthermore, sale of land to private ports may also sometimes raise a national security issue.

The UK decided to move to full privatization for three main reasons:

- To modernize institutions and installations both of which often dated back to the early years of the industrial revolution in order to make them more responsive to the needs and wishes of the users.
- To achieve financial stability and financial targets with an increasing proportion of the financing coming from private sources.
- To achieve labour stability and a degree of rationalization followed by a greater degree of labour participation in the new port enterprises.

**In conclusion, private financing of port infrastructure is related to the institutional setup of the port. Most PPP models in the ports sector sit within a landlord port structure in which a public sector port authority (often autonomous) enters into PPP contracts for a series of individual terminals. The operators of the terminals are usually, but not always, different, and the PPP model used may differ from one terminal to the next. The role of the port authority is to provide and manage common facilities like the breakwater and entrance channel, utilities and road and rail access; to regulate the individual PPPs; and to plan and implement the expansion and development of the port. The terminal operators pay a lease for the land they use and receive income from shipping lines for services provided i.e. cargo handling. The port projects in the GTI investment program are mostly related to cargo handling facilities and are therefore recommended to be implemented as BOT concessions subject to the presence of a landlord model.**

# 6 Finance Strategy

## 6.1 TEN-T Financing Framework

In view of fiscal constraints, preference is given to private financing of the suggested investments for the improvement of the GTR transport corridors. As most of the suggested investments are located in Mongolia, which has the least conducive environment and least attractive financing conditions for PPP, it is questionable whether these investments will be successfully implemented without cross-border cooperation.

Best example of cross border cooperation in developing transport infrastructure is the development of the Trans-European Transport Network (TEN-T). The financing framework is driven by the principle of a common market where to member states donate a financial contribution to the European Commission based predominantly on the size of their economy and where projects with a regional impact are eligible for financial support based on the merits of the project.

The Commission has initiated several instruments to co-finance the TEN-T investments and to enhance the use of private capital for the TEN-T, including:

(i) TEN-T Budget
(ii) Cohesion Fund
(iii) European Regional Development Fund
(iv) European Investment Bank

### (i) *TEN-T Budget*

The European Commission's Directorate General for Energy and Transport (DG TREN) had a budget available of EUR 8 billion for the TEN-T for the period from 2007-2013. The TEN-T budget is only available to projects that do not receive grants from the Cohesion Fund or the Structural Funds. As many of the new member states and accession countries are eligible for Structural and Cohesion funds, most of the TEN-T budget goes to old member states. Furthermore, 85% of the budget is allocated to the priority projects. Community assistance may be combined. However, regardless of the form of intervention chosen, the total amount of Community aid may not exceed 20 % of the total investment cost.

The TEN Financial Regulation[12] provides that the TEN budget can be used for the following purposes:

- Co-financing of studies (up to 50% of the costs of the study);
- Direct grants for investment in duly justified cases;
- Risk Capital Facility (RCF);
- EIB Loan Guarantee Scheme;
- Interest subsidies on loans granted by the European Investment Bank or other public or private financial bodies.

The instruments to facilitate private capital concern:

- Risk Capital Facility;
- EIB Loan Guarantee Scheme.

[12] Regulation (EC) No 2236/95 as amended by Regulation (EC) No 1655/1995 of 19 July 1999, Regulation (EC) No 788/2004 of 21 April 2004 and Regulation (EC) No 807/2004 of 21 April 2004

*Risk Capital Facility*

The RCF has been initiated by the European Commission as a facility to provide risk capital to TEN projects that are (partly) privately financed through the concept of Public Private Partnerships (PPP). The European Commission has made available EUR 46 million under the management of the EIB, for this facility. EUR 25 million has been allocated for the purpose of co-investments alongside with a private infrastructure investment fund known as Galaxy Fund (GF) of which to date EUR 3 million has been disbursed to provide mezzanine debt to ALIS, a project company that holds a concession for the A28 Rouen - Alencon tolled motorway (France).

*Loan Guarantee Scheme*

The recently designed loan guarantee scheme is expected to help attract additional private capital. The instrument is financed by the EU TEN Budget (EUR 500 million) and the EIB (EUR 500 million). The instrument is intended to provide support for specific types of PPPs. The aim is to stimulate private sector investment in priority TEN-T projects by providing credit assistance. The Loan Guarantee Scheme is therefore designed to provide a cushion for unexpected shortfalls in the cash flow available for debt service. It is an EC commitment backing a subordinated debt facility of a TEN project during the ramp-up period, which is from the end of the construction to the stabilization of the cash-flows. The fund of EUR 1 billion can provide a total amount of EUR 5 billion worth of guarantees, based on a capital provision of 20%. The guarantee facility underpins the senior debt facility as debt providers have the confidence that subordinated debt will remain in the project. This reduces the risk profile of the project considerably and will attract more senior debt providers. This means that the leverage has high potential to increase further due to this support for bankability. It is can be expected that the leverage is 20 to 30 times the original contribution of the Commission.

Textbox

**Portuguese PPP project first to benefit from LGTT**

The A4/IP4 road PPP in the North of Portugal signed in May 2008 is the first project to benefit from LGTT. The financing included a EUR 20 million LGTT tranche on top of a EUR 180 million SFF senior loan. The PPP structure is based on availability and traffic related service payment by the project promoter to the private company and real tolls collected by the private company but fully passed on to the promoter.

*Source: EIB Information 3 – 2008*

The Commission has furthermore initiated several non-financial instruments to support the preparation of the TEN-T projects, most notably:

- Jaspers, focussed on technical assistance to the Member States
- Trans-European Network Executive Agency (TEN-TEA); focussed on management of the Commission's TEN-T Budget

### (ii) *Cohesion Fund*

The Cohesion Fund is a structural instrument that helps Member States to reduce economic and social disparities and to stabilise their economies since 1994.[13] For the period 2007 – 2013 EUR 308 billion has been allocated to the Cohesion Fund. The Cohesion Fund finances up to 85% of eligible expenditures of major projects involving the environment and transport infrastructure (as identified in the Trans-European Transport Network (TEN) guideline). Public or private bidders, responsible for the implementation of a

[13] Details on the Cohesion Fund are available at: [http://ec.europa.eu/regional_policy/funds/procf/cf_en.htm ]

project, can apply. Projects that are co-financed by the EU budget, are not eligible. Funds are mainly allocated to projects that are within the fields of transport and environment.

Textbox

**Lisbon Vasco da Gamma bridge – Portugal**

The Vasco da Gamma bridge in Portugal concerns a 33 year DBFO contract including the operations and maintenance of the 25 April bridge (parallel t the Vasco da Gamma Bridge). This contract has been awarded to Lusoponte. Although the project was procured based on a DBFO contract, many of the main risks are contractually allocated to the government. The total investment cost of this bridge was EUR 900 million. The bridge is funded by a 20-year EIB loan (33%), the Cohesion Fund (35%), government grants (26%) and private shareholders (6%). The private capital and EIB repayment are based on toll revenues

*Source: EC*

### (iii) *European Regional Development Fund*

The ERDF is one of the European Structural Funds. It was established in 1975 with the intention to stimulate economic development in the EU's least developed regions. Two types of regions are eligible for ERDF funding:

- Objective 1 regions: regions where GDP is below 75% of EU average
- Objective 2 regions: regions that are facing structural economic difficulties.

The ERDF does not contribute more that 50% of the eligible costs, which can be increased to 75% in Objective 1 regions. In case of investment in infrastructure generating substantial net revenue, the contribution cannot exceed 40% of eligible costs in Objective 1 regions. To be eligible for ERDF assistance projects must meet the following criteria:

- The project objectives must correspond with one or more priorities for support in a regional programming document agreed with the EC;
- The project must have clear and attainable targets and offer additional and sustainable advantages to the economic development of the area;
- The project would not be able to proceed without ERDF support.

### (iv) *European Investment Bank*

The EIB is a leading source of bank finance for transport infrastructure in the Union and Accession Countries. From the inception of the policy in 1993 to December 2005, loans amounting to EUR 69.3 billion for transport TENs and EUR 9.1 billion for energy TENs were signed.

Closer collaboration between EIB and the Commission and other important stakeholders has been initiated. The EIB is acting as an advisor to the Commission, Member States and Public Authorities on TEN, PPP financing, and other institutional issues. In 2005, the EIB signed a Memorandum of Understanding with DG TREN to formalise the existing cooperation between the Bank and the Commission in support of transport and energy TEN projects. This agreement concerns policy definition and formulation as well as specific project financing.

The EIB does not finance the total investment cost of a project; the objective being to capitalise on the Bank's first-rate lending terms to attract other viable sources of financing. The EIB contribution does

normally not exceed 50% of the total investment cost, although for trans-European transport schemes funding may amount to as much as 75% in exceptional cases.

Restricting EIB financing to 50% enables the borrower to establish a dynamic and diversified finance plan in partnership with other financial institutions and banks.

EIB loans can be an addition to local and national budgetary assistance as well as to EU grants, such as structural funds, depending on the scope and nature of the individual project.

No territorial restrictions apply to EIB loans. They are granted on the basis of banking criteria. These criteria include the financial (i.e. ability to repay), technical and environmental feasibility of the project.

In general terms, the EIB has four main financing facilities for transport infrastructure:

- Individual loans for capital expenditure programmes or projects;
- TEN Investment Facility;
- Structured finance facility;
- Loan Guarantee Scheme (as described already).

*Loan facilities*
EIB provides individual loans for capital expenditure programmes or projects with capital requirements of more than EUR 25 million, which are relevant in the context of large-scale infrastructure projects such as TENs. A number of facilities can be used for the TEN-T.

*TEN Investment Facility*
In order to attract more private capital for TENs, the EIB has improved its financial instruments, introduced additional risk taking, and increased EIB resources with a new TENs Investment Facility (TIF) designed to invest EUR 75 billion until 2013. The Bank's financial operations cover traditional long term lending products from own resources (senior loans, PPP loans, securitised loans etc.) with long maturities and grace periods. In exceptional cases, the EIB can, under this Facility for investment grade projects, provide maturities of up to 35 years and finance, in exceptional cases (specific cross-border projects), up to 75% of project costs. [14]

*Structured Finance Facility*
In order to match the types of funding to the requirements of projects with a high-risk profile and to pursue its equity financing and guarantee operations in favour of large-scale infrastructure schemes, the EIB has established a Structured Finance Facility (SFF).

Under this facility, the EIB can assume a greater degree of credit risk in the financing of projects than it normally would. Total reserves of EUR 750 million have been set aside under this heading over a three year period for the purpose of generating operations amounting to between EUR 1.5 and 2.5 billion. A broad mix of financial products is provided:

- Senior loans and guarantees incorporating pre-completion and early operational risk;
- Subordinated loans and guarantees ranking ahead of shareholder subordinated debt;
- Mezzanine finance, including high-yield debt for industrial companies in transition from SME scale or in the course of restructuring;
- Project related derivatives.

[14] Further information is available at [ http://www.eib.org/projects/topics/tens/european-action-for-growth/index.htm ]

The aim of the SFF is to render value added for priority projects by complementing the commercial banks and capital markets. These operations will be undertaken foremost in the countries of the European Union, but also in non-member countries.[15]

## 6.2 GTI Infrastructure Fund

Given the fact the smallest and least conducive economy is responsible for the majority of the regional transport infrastructure investments, which includes to a large extent high risk projects, it is recommended to establish a cross-border financing facility comparable to some of the elements of the European TEN-T financing framework and the PPP framework in India.

The TEN-T financing framework is based on the principle that all member states support the development of cross-border infrastructure based on how much they can afford given the size of their economy irrespective of the location of the infrastructure or the financing conditions of the respective country.

The PPP framework is worldwide recognized as the one of the most cohesive and complete set of facilitating instruments for successfully implementing PPP and as such increasingly copied to other countries.

The objective of the suggested cross-border financing facility is to efficiently and effectively facilitate the financing of the development and management of GTI transport infrastructure projects using the strength of all member countries.

It could be positioned as the GTI Infrastructure Fund (GTIF), which is to offer the following products and or services:

(i) Long-term debt financing
(ii) Viability Gap Financing
(iii) Risk Mitigating Guarantees

### (i) Long-term Debt Financing

As explained long-term debt facilities are critical to the viability of a PPP arrangement. Access to long-term debt facilities is the GTR is questionable given the limited experiences of the local banking sector with PPP arrangements, in particular in Mongolia.

The GTIF could provide such long-term debt facilities backed by the member countries and their development banks. The GTIF could also arrange further financing sources from International Finance Institutions like the World Bank.

The following principles are proposed:

1. GTIF is a financing facility for providing long-term finance to PPP projects;
2. GTIF shall provide predominantly long-term financing through loans;
3. GTIF is funded by GTI member countries and IFIs;
4. GTIF shall provide products on commercial terms;
5. GTIF will only act as Co-Financier;
6. GTIF is applicable for approved PPP projects;
7. GTIF is prioritized based on First Come First Serve basis;

[15] Further information is available at [ http://www.eib.org/products/loans/special/sff/index.htm?lang=-en ]

8. GTIF will be disbursed and recovered pari passu with other project debt.

Textbox

**India Infrastructure Finance Company Limited**

A good example of an effective facility to overcome the limited access to long-term debt facilities is the India Infrastructure Finance Company Limited, which has contributed significantly to the successful development of PPP in India, having participated in over 50% of the completed PPP transactions in India.

- Established as a wholly government-owned company with an authorized capital of Rs 2,000 crore of which, paid-up capital, at present, is Rs 1,800 crore.
- A dedicated institution purported to assume an apex role for financing and development of infrastructure projects in the country.
- Role is to fill the gap for long-term infrastructure finance that banks are not in a position to address.
- Lend up to 20% of the capital costs of a project
- Assistance through long term debt; either by way of refinance to banks and financial institutions (FIs) with tenor exceeding 10 years or by direct lending to project companies
- Raises resources under Government of India guarantee

*Source: PPP in India.com*

### (ii) Viability Gap Financing

Viability Gap Financing (VGF) is meant for projects where financial viability is not ensured but their economic and social viability is high. VGF could be in the form of capital grant or annuity payment or in both forms. VGF in the form of capital grant shall be disbursed only after the private sector company has subscribed and expended the equity contribution required for the project. The VGF is to be managed by the GTIF and is for disbursement to the PPP Project Company, upon request by the implementing agency, as per the terms of the concession contract.

The following principles are proposed:

1. VGF is a public financing facility sourced from contributions from the GTI member states;
2. VGF is managed by the GTIF;
3. VGF is applicable to BOT contracts only;
4. VGF is maximum 20% of the project cost and can be supplemented up to a further by the responsible implementing agency;
5. VGF is maximum 25% of the total amount of the VGF facility in a given year;
6. VGF is prioritized based on the economic value of the project with a minimum requirement of 12% Economic Rate of Return;
7. VGF is awarded to the private partner with the lowest request for VGF;
8. VGF will be disbursed upfront subject to Performance Bond;
9. VGF may receive income from Revenue Sharing Agreements.

### (iii) Risk Mitigating Guarantees

The main challenge encountered when designing project-financing strategies is to mitigate the following risks for capital providers: country risks, project risk, interest risks and currency risks.

*Country Risks*

This category of risks, includes such diverse events as:

- Expropriation and confiscation of assets;

- Comprehensive non-payment;
- Transfer and convertibility restriction;
- Political violence due to revolution, insurrection, civil unrest, terrorism or war
- Unlawful repudiation of contract;
- Wrongful calling of bonds, letters of credit or similar on-demand guarantees;
- Embargo;
- Arbitral award default.

In order to improve the attractiveness of GTI projects in the eyes of foreign investors, financing modalities must therefore be put in place to mitigate such risks.

*Project Risks*

Another category of risks which financing modalities proposed for PIDA PAP projects must be able to mitigate is project risks. Those relate mainly to cost overruns, construction delays, wrong demand assumptions, etc. By nature they strongly differ depending on the sector considered and solutions are mostly to be found at project level. Revisiting the project structure and optimizing the envisaged allocation of risks between the public and private parties can generally go a long way towards providing sufficient comfort to potential bidders and investors, for instance by introducing one or several of the below:

- Guaranteed maximum price;
- Minimum payment guarantee;
- Adequate profit-sharing mechanism;

*Currency Risks*

The third large category of risks currently relates to foreign exchange risks, which arise as a consequence of a currency mismatch between the costs and revenues of a particular project. The most frequent situation is the one whereby a large portion of the initial investment costs is labelled in hard currency such as USD or EUR, whereas the revenues drawn from the project are labelled in local currency. There are several solutions to mitigate such risks, including:

- Currency swaps and other hedging instruments provided by banks and multilateral agencies like TCX;
- Fee indexation and adjustment mechanisms;
- Direct hard currency soft loans to government matching envisaged payments to be made to the private contractor;
- Local financing backed by guarantees from development partners.

GTIF could facilitate in mitigating these risks by providing the following guarantees using the joint financial strength of its member countries

- *Minimum Revenue Guarantees* i.e. guarantee that in case revenue or demand during the operations phase drops below a predefined threshold, the government will supplement revenue;
- *Interest Rate Guarantees* i.e. guarantee that in case interest rates upon refinancing exceed a predefined threshold, government will bear the additional costs;
- *Exchange Rate Guarantees* i.e. guarantee that in case exchange rate upon operations drop below a predefined threshold, government will bear the additional costs.

It could be envisaged that the GTIF would be jointly established by the development banks of the GTI member countries, who already signed an MOU for the Northeast Asia EXIM Banks Association in August 2013 agreeing to either individually or jointly finance GTI project. This includes:

- China Eximbank;
- Korean Eximbank;
- Mongolian Development Bank;
- Russian Vnesheconombank.

## 6.3 GTI Program Implementation Unit

In order to facilitate and effective implementation of the undertaking it is recommended to establish a Joint Project Implementation Unit, which could be referred to as GTI Program Implementation Unit (GTPIU). The GTPIU will be responsible for supporting the preparation and implementation of the GTI projects in a consistent manner benefiting where possible from standardization and using the best available resources from the member countries.

The unit could act as an (i) executing agency comparable to TEN-T Executive Agency or as an (ii) Expertise Centre like European PPP Expertise Centre.

### (i) Executing Agency

The Trans-European Transport Network Executive Agency (TEN-TEA) was created on 26 October 2006. The Agency manages the Community TEN-T budget available for the promotion of the trans-European Transport network in close collaboration with DG TREN of the European Commission. Starting from 2007 the Agency manages an annual budget of approximately EUR 1 billion.

The main tasks of the Agency are:

- To ensure the technical and financial management of projects co-financed under the TEN-T networks' budget;
- To collect, analyse and transmit to the Commission of all information required for the implementation of the TEN-T network as well as assisting the Commission with programming for the TEN-T network;
- To check the conformity of projects co-financed by the Community with the transport policy rules and principles applicable to TEN-T network infrastructures;
- To provide technical support to project promoters and to the financial institutions which will be responsible for managing the loan guarantee instrument for TEN-T network projects.
- To provide any technical and administrative support requested by the Commission.

### (ii) Expertise Centre

European PPP Expertise Centre (EPEC) is a collaboration between the European Investment Bank (EIB), the European Commission, and European Union member and candidate countries. Its primary mission is to strengthen the organizational capacity of the public sector to engage in Public Private Partnership (PPP) transactions, by allowing PPP taskforces in EU Member and Candidate countries to share experience and expertise, analysis and best practice relating to PPP transactions. This experience is then disseminated in terms of practical and operational guidance. Membership in EPEC is exclusively for the public sector. EPEC was founded in 2011.

EPEC carries out three main types of activity:

- Collaborative work, which offers a structured approach to identifying good practice in issues of common concern to members who implement PPP policies and programmes, drawing extensively on the experience and expertise of its membership;
- Helpdesk, which members can email or phone with queries;
- Policy and Programme Support for members, which covers a wide range of non-project specific support for PPP development. Reports produced by EPEC for individual members may be disseminated more widely if these raise issues of a general nature that could be shared across the network. EPEC does not however provide consultancy services to support the procurement or negotiation of individual PPP transactions.

Depending on the role of the GTIPIU, the following functions could be allocated to it:

- Coordinate with concerned public agencies in respective countries and sectors;
- (Facilitate to) arrange budget for project preparation and tendering;
- (Facilitate to) hire and manage advisors (prepare terms of reference, design evaluation and selection criteria, participate in steering committee);
- Standardize project documentation taking into account country specific legislation e.g. request for expression of interest, request for proposals, model concession agreements and alike;
- Disseminate knowledge on PPP to concerned agencies based on international best practices.

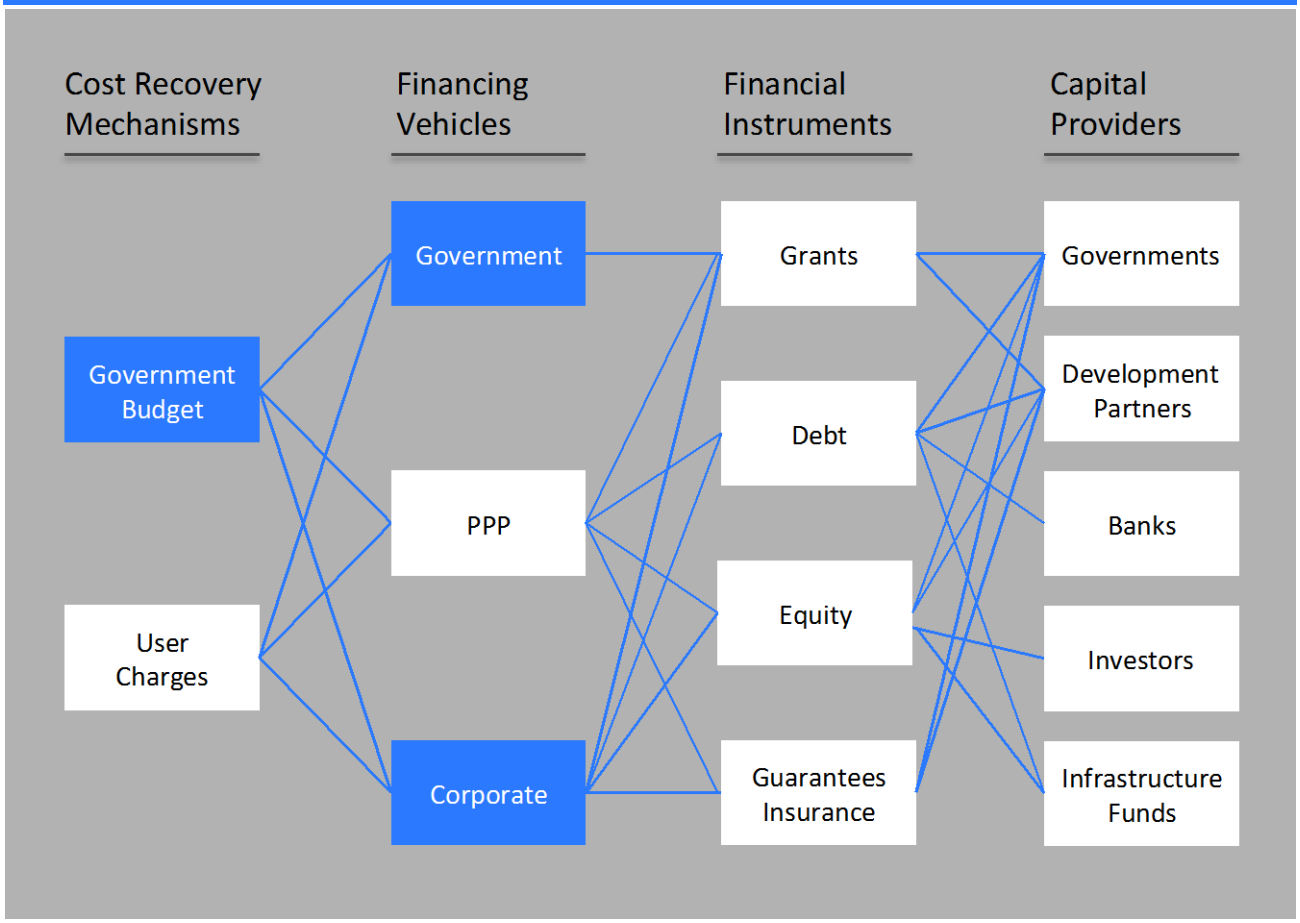
# 7 Conclusions

**PPP preferred mode of project delivery**

As indicated in the sector review it can be concluded that the projects included in the GTI investment program are all in principal suitable for private financing through PPP based on a cost recovery through user charges. This applies essentially to all projects identified in the investment program subject to further project appraisal.

It may be necessary based on project-specific demand to support the bankability of the respective projects through government grants i.e. VGF and or guarantees such as revenue guarantees, currency exchange rate guarantees, political risk guarantees and so on. This finance mode is preferred over government financing assuming fiscal constraints for the involved countries, in particular Mongolia. It is also preferred over corporate financing assuming limited financial strength of the involved corporations. Moreover PPP has proven to be more efficient in terms of value for money that conventional project delivery schemes.

Figure 20: Finance Strategy




*Source: consultant*

**Using PPP implies private financing**

The implication for the specific projects as included in the investment is that the capital providers are essentially commercial equity and debt providers supported where applicable by the respective government. As project finance is commonly characterised by 20-30% equity financing and 70-80% debt financing, and given a total value of the investment program of US$ 2.7 billion, this would imply a need for some US$ 0.7 billion of equity and some US$ 2 billion of debt facilities. Equity could be provided by investors, which either have an interest or competence in a specific sector or infrastructure investors in general. Debt facilities could be provided for commercial banks supported by IFI's such as the World Bank.

Table 4: Financing Program (in USD million)

| # | Project | Mode | Country | Corridor | Cost Estimate | Capital Providers | Source of Income |
|---|---|---|---|---|---|---|---|
| **1** | Khuut – Nomrog Railway | Rail | MON | TTC | 903 | | Track Access Charges |
| **2** | Choibalsan – Nomrog Highway | Road | MON | TTC | 579 | | Tolls |
| **3** | Nomrog BCP | BCP | MON | TTC | 2 | 20 – 30% Investors | Tolls |
| **4** | Arxan – Ulanhot Railway and Transshipment Yard | Rail/BCP | PRC | TTC | 251 | 70 – 80% Commercial Banks<br>NEA EXIM Banks<br>Association IFI | Handling Fees |
| **5** | Hunchun Logistic Centers | Rail | PRC | TTC | 81 | | Land Lease |
| **6** | Zarubino Port Container Terminal | Port | RF | TTC | 402 | | Handling Fees |
| **7** | Choibalsan – Ereentsav Railway | Rail | MON | STC | 200 | | Track Access Charges |
| **8** | Pogranichny Container Terminal | Dry Port | RF | STC | 101 | | Handling Fees |
| **9** | Amur River Bridge | Rail/Road | RF/PRC | DTC | 252 | | Track Access Charges/Tolls |
| **10** | Baruun Urt – Bichigt | Road | MON | TTC | TBD | | Tolls |
| | **Total** | | | | **2,771** | | |

*Source: Consultant*

**Join forces to effectively and efficiently facilitate PPP**

As a significant part of the envisaged investments is located in Mongolia, which is characterised by a high country risk profile, high inflation, weak currency and limited readiness for PPP it is recommended to join forces and make use of the joint financial strengths and experiences in PPP.

**GTIF to facilitate access to capital and reduce cost of capital**

This joining of forces could be materialised through the establishment of the Greater Tumen Infrastructure Fund (GTIF), which would be involved as a revolving fund in:

(i) Long-term debt financing
(ii) Viability Gap Financing
(iii) Risk Mitigating Guarantees

The GTIF could be established by the concerned development banks as shareholders and main capital providers. Also IFI's could participate in this vehicle. The vehicle could act as a catalyst for arranging long-term debt financing in view of the relative immaturity of non-recourse financing in the region and could use using each others financial strengths provide guarantee schemes which would reduce the cost of capital and enhance the bankability of the respective projects.

**GTIPIU to support efficiency and effectiveness of project preparation**

In view of the complexity of PPP it is recommended to also join forces in terms of capacity to prepare projects and standardize project documentation where possible taking into account country specific legislation. For example PIMAC in ROK has already gained extensive experience in developing PPP and it would be beneficiary to make use of these experiences and competencies.

This could be materialised through establish a joint program implementation unit i.e. Greater Tumen Initiative Program Implementation Unit which could act as an expertise centre or even as an executing agency in line with experiences in for example Europe.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