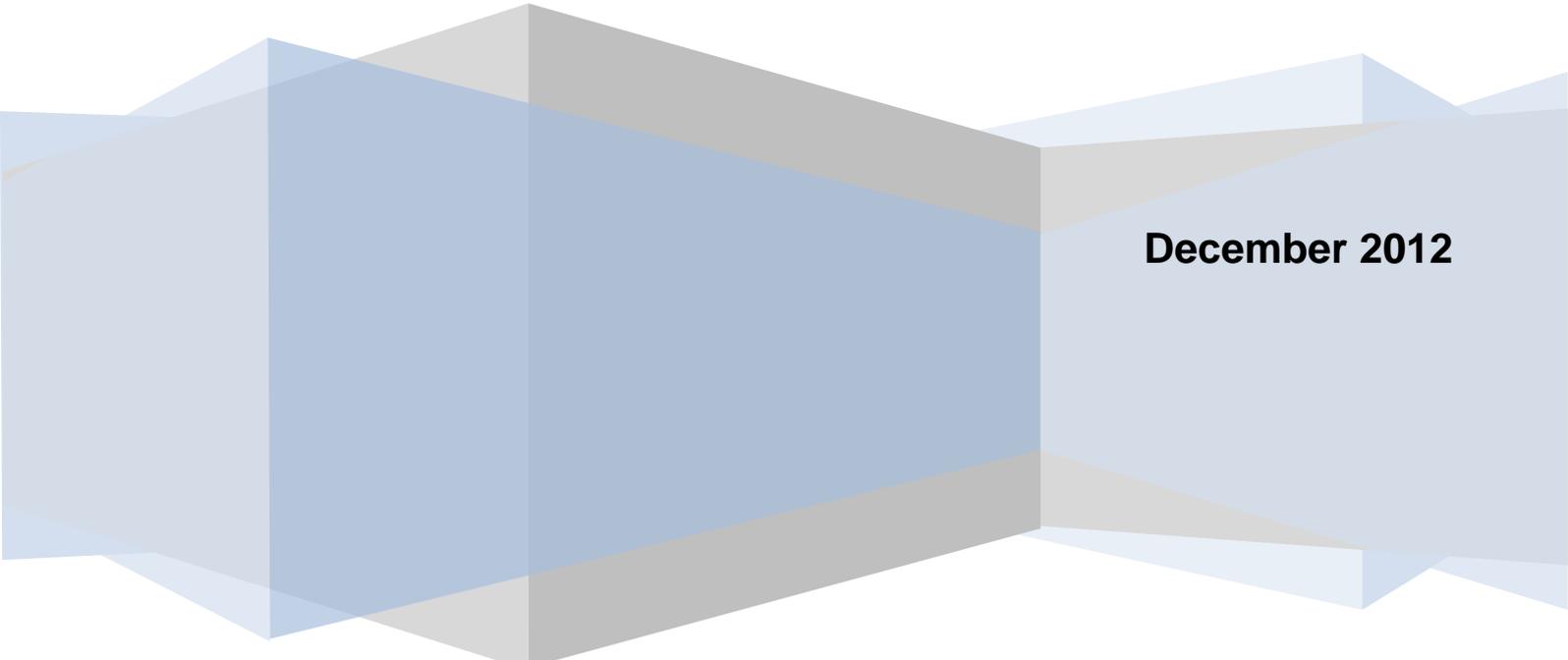


# **A report for the ECO Secretariat**

**CORRIDOR MANAGEMENT STUDIES FOR THE  
AEGIS OF THE JOINT ECO/IDB PROJECT ON  
IMPLEMENTATION OF THE TTFA**

## **ECO Road Network Development Plan**

**FINAL DRAFT**



**December 2012**

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## 1. INTRODUCTION

### 1.1 Background

The development of a reliable and efficient road transport network in the ECO region is of high priority, and, hence, ECO has promoted intra-regional transport connections through the promotion of cost effective road transport corridors . It has also contributed towards the implementation of the decisions of the Member States to ease development of efficient transit transport system in the region, focusing efforts on suggesting the improvement of the existing infrastructure to meet the new demands and challenges. One related study is the “Corridor Management Studies under the aegis of the Joint ECO/IDB Project on Implementation of the TTFA”.

### 1.2 Scope of the Report

The “**ECO Road Network Development Plan**” constitutes part of the “ECO Priority Road and Rail Routes and Infrastructure Projects” Study, prepared by the Consultant (Contract between the Economic Cooperation Organization (ECO) Secretariat and Dr. Dimitrios Tsamboulas-Consultant), and has the following main objectives:

1. Identifying the main road transport corridors in the ECO Member States and the ECO general region for priority development and cooperation.
2. Identifying the priority road transport infrastructure projects along the proposed ECO priority road routes.
3. Develop an ECO Road Network Investment Plan of priority on-going and/or planned road transport infrastructure projects along the proposed ECO priority road routes.

### 1.3 Report Outline

The structure of the report includes five Chapters, as per the following:

Chapter 2 presents a description of the data collection procedure followed for the purpose of the analysis.

Chapter 3 presents the methodology employed to identify the road corridors in the ECO region for priority development, together with their detailed description.

Chapter 4 presents the development of the methodology for the identification of proposed road projects and their prioritisation, the results of the prioritisation exercise and the investment and time plans of the priority on-going and/or planned road transport infrastructure projects along the proposed ECO Priority Road Routes.

Chapter 5 presents the Country Reports for each country participating in the study, detailing current conditions on road transport infrastructure, as well as National Transport Plans and related recommendations.

Chapter 6 presents conclusions and related recommendations from the Consultant.

## **2. DATA COLLECTION**

### **2.1 Introduction**

The two key tasks of the study, that is, the identification of the main road transport corridors in the ECO region for priority development and cooperation, as well as the identification of the priority transport infrastructure projects along the proposed routes, required foremost the input of each ECO Member country. To this end, the Consultant produced a set of documents for information collection, which were sent to National Experts of the ECO countries. These included the terms and conditions-terms of reference (ToR) - for the National Expert for the elaboration of the country report, together with predefined tables/questionnaires for consolidating the required information. More specifically, the following documents were prepared and sent to the National Experts:

- ToR for National Experts for the preparation of country report on priority road routes and status of road transport infrastructure projects.
- Format for preparation of country report including a set of guidelines.

The above documents are presented in *Annex I*.

### **2.2 Part 1-ECO Road Routes**

The purpose of this part is to obtain a picture of the main transport road routes/corridors within the ECO territory for priority development and cooperation, and, hence, the National Experts were asked to identify the key road links and road border crossings in the ECO territory, based on the following guidelines:

- Proposed links/routes should be of international importance for transport between the ECO countries
- Proposed links/routes should connect to the proposed ECO routes

In addition, for each proposed ECO Road Route, the National Experts were asked to fill in a table, with data on the technical characteristics and performance of each road link and related borders crossing points along the identified ECO Road Routes.

### **2.3 Part 2-ECO road transportation infrastructure projects**

An integral part of the study is also the identification of the priority road transport infrastructure projects, which are either planned for implementation or already under construction. To this end, the National Experts were asked to identify these along the proposed road routes/corridors stipulated in the previous part. For each specified infrastructure priority project, the consultant prepared a template with the scope to consolidate, among, others, the necessary information to be used in the subsequent project prioritization exercise of the study, presented in *Annex I*.

In addition to the above information, the National Experts were asked to analyse the status of implementation of the road transport infrastructure projects along the corridors and routes proposed, identify the barriers for effective funding/ implementation, as well as provide recommendations on potential sources of funding for the cases of projects with non-secured funding.

The information collected was summarized in a database, listing the road infrastructure projects per country, together with key information regarding their location with regard to the identified routes, current status, start and end dates, cost and sources of financing, etc.

The completed templates sent by the National Experts are presented in *Annex V*, while the database is presented on a country-by-country basis in *Annex II* to this report.

## **2.4 Part 3-Country Reports**

The National Experts were asked to prepare a short country report on the National Transport plans of their respective country until 2025.

### **3. IDENTIFICATION OF ECO PRIORITY ROAD ROUTES**

#### **3.1 Introduction**

The objective of this chapter is the identification of the main road transport corridors in the ECO region for priority development and cooperation. Initially, the methodology and related criteria, according to which the road routes were selected, are presented, followed by a detailed description of the identified routes.

#### **3.2 Methodology for identification of the main ECO Priority Road Routes**

The methodology, according to which the ECO Priority Road Routes were identified, was based on the following:

- Analysis and evaluation of the ECO Member States National Experts input and replies to the questionnaires and country reports sent by the Consultant, indicating priority routes and infrastructure projects of strategic national and regional importance.
- Analysis and evaluation of existing transport corridors initiatives in the region including the Euro Asian Transport Linkages project of UNECE, Asian Highways of UNESCAP, the CAREC project of the Asian Development Bank and the TRACECA project.
- Consideration of ECO strategy and projects on corridors development so far, as well as strategic thoughts for the future.
- The Consultants' experience in the identification and prioritization of transport corridors in the region built from expertise acquired in related projects, such as the Euro-Asian Linkages<sup>1</sup>, TEM and TER projects<sup>2</sup>, etc.

Further to the above, the priority corridors were selected based on the following criteria:

- The prioritized corridors should be among the international recognized ones of UNECE and UNESCAP.
- They should go through and cover all the ECO Member States, but also create all possibilities for facilitation of trade and transport in region.
- They should be extended routes of the Euro Asian ones, which would facilitate their further development.
- There should be consensus by neighbouring countries, indicating their readiness to contribute to their development.
- Ideally, selected routes should either be already operational, or be in an advanced state of "readiness" for operations. This "readiness" may be considered from both a technical perspective and from the perspective of political willingness.

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<sup>1</sup> <http://www.unece.org/trans/main/eatl.html>

<sup>2</sup> <http://www.unece.org/trans/main/temterm/about.htm>

In addition to the above, the structure of each route/corridor identified includes the following elements:

- **ECO Main Route:** Key road corridor traversing ECO Member States only.
- **Extension:** Segment with point of origin located on the ECO Main Route, traversing ECO Member States and ending in a node (city, port) *within* the territory of an ECO Member State.
- **Branch:** Segment with point of origin located on the ECO Main Route, traversing ECO Member States and ending in a *border crossing* with a non-ECO Member State neighbouring country.

### 3.3 ECO Road Routes

In total, 7 priority Road Routes were identified in the region. A short description of the routes is provided in the following, while Tables 3.1-3.7 list the identified routes in detail, primarily on a country-to-country basis, and secondarily on a node-to-node (city-to-city) basis within the territory of each ECO Member State.

The seven priority road routes are depicted in Figures III1-8 in *Annex III*.

The **ECO Road Route 1A** starts at the western borders of Turkey with Bulgaria, as well as Greece, and continues across the northern part of the Turkish territory through the city of Amasya towards Agri in the Iranian borders. Then, it continues in the Iranian territory passing via Tehran and following a south-eastern direction towards Zahedan and the borders of the Islamic Republic of Iran with Pakistan. In the Pakistani territory, the route follows a north-eastern direction parallel to the Afghani borders until Quetta, then continues south to Rohri and resumes the northeastern direction towards Multan up to Lahore, ultimately towards the border with India.

The route 1A has one extension from Qazvin in Iran with south-western direction towards the Iraqi borders. In addition, it has three branches in the Turkish territory that connect the route with the main ports of Turkey, namely Samsun, Mersin, Izmir / Cesme and Candarli, and two branches in Iran connecting to Irani Ports Bandar e Abbas and Chabahar.

The route serves the connection of the ECO Member States Turkey, Iran and Pakistan, with extensions towards India and Iraq. Proposed branches connect the identified route with key maritime ports in the ECO region, in Turkey and Iran.

The **ECO Road Route 1B** constitutes an alternative of ECO Road Route 1A, where, in the Iranian territory, has an eastern direction towards the Afghani borders, crossing the Afghani territory with a north-eastern direction and then passing onto the territory of Tajikistan through the city of Dushanbe, continuing towards the border with China.

The route has two proposed extensions, one as per Route 1A to Iraq, and one additional through Almaty in Kazakhstan to the border with China.

This route has the same branches as Road Route IA, with two additional ones, those starting from Herat in Afghanistan, connecting with the two ports in Pakistan, namely, Karachi and Gwadar.

The route serves the connection of the ECO Member States Turkey, Iran, Afghanistan and Tajikistan with extensions towards China and Iraq. Proposed branches connect the identified route with key maritime ports in the ECO region, in Turkey, Iran and Pakistan.

The **ECO Road Route 2** is similar to Road Route 1A, starting from Bulgaria and Greece and continuing across the northern part of the Turkish territory towards the Iranian borders and onto to the city of Tehran in Iran. Then, it follows a north- eastern direction towards the borders with Turkmenistan at the Serakhs border point. It continues north, passes through Tashkent in Uzbekistan and Bishkek in Kyrgyzstan, to Kazakhstan and towards the Chinese borders.

The ECO Road Route 2 has one extension connecting the route with China through Dushanbe in Tajikistan, then Irkeshtam in Kyrgyzstan and onto the Chinese border.

In addition, the Road Route 2 has two branches: both branches connect the route with Turkish ports, namely Mersin, Cesme and Candarli. Road Route 2 has the same branches as Road Route 1A, connecting the route with the Turkish ports Samsun, Mersin and Izmir / Cesme, as well as connecting it with Irani Ports Bandar e Abbas and Chabahar.

The route serves the connection of the ECO Member States Turkey, Iran, Turkmenistan, Kazakhstan and Kyrgyzstan with extensions towards China. Proposed branches connect the identified route with key maritime ports in the ECO region, in Turkey and Iran.

The **ECO Road Route 3** starts from the borders of Azerbaijan with the Russian Federation, continues with a southern direction through Baku to the Irani borders, onto Tehran in Iran, ending up in the Irani port Bandar e Abbas.

The route has four branches, two of which are the missing links/connections from Bandar e Anzali in Iran through the Caspian Sea onto Aktau in Kazakhstan and Turkmenbashi in Turkmenistan. The other two are within the Irani territory, ending up in the Irani ports of Bandar e Emam Khomeyni and/or Bandar e Bushehr and Chabahar, respectively.

The route serves the connection of the ECO Member States Azerbaijan, and Iran and is connected with key maritime ports in the ECO region, in Iran, Kazakhstan and Turkmenistan.

The **ECO Road Route 4** connects the Russian Federation with the port of Iran, Bandar e Abbas. The route starts from either border crossing point Ozinki or Zhelaevo to the City of Uralsk in Kazakhstan , following a southern direction to Turkmenbashi in Turkmenistan, onto Iran through Pol, ending up at the Irani port of Bandar e Abbas.

The route has one branch, connecting it to the other Irani port Chabahar through Bam.

The route serves the connection of the ECO Member States Kazakhstan, Turkmenistan and Iran. It also connects with key maritime ports in the ECO region in Iran.

The **ECO Road Route 5** starts from the border crossing points of Karakoga or Mamlyutka in Kazakhstan with the Russian Federation, continuing with a southern direction through the territory of Kazakhstan onto Almaty, passing through Kyrgyzstan in Bishkek, returning to Kazakhstan via Sypatay Batyr. Then, it continues in the territory of Uzbekistan through Tashkent to the border with Turkmenistan, Turkmenabad. It follows a southwestern direction

through Turkmenistan, crossing at the borders with Iran. Finally, it traverses the Iranian territory in a southern direction ending up in the port of Chabahar.

The route has the following four proposed extensions:

- From Astana in Kazakhstan to Kosmomolets, the border crossing point with the Russian Federation.
- From Shymkent in Kazakhstan to either of the following border crossing points with the Russian Federation:
  - Ozinki
  - Zhelaevo
  - Martuk
- From Almaty in Kazakhstan to Korgas, the border crossing point with China.
- From Samarkand in Uzbekistan to Irkeshtam, the border crossing point with China.

In addition, two branches are proposed, one connecting Mary and the port of Turkmenbashi in Turkmenistan, and one connecting Mashhad with the port of Bandar e Abbas in Iran.

The route serves the connection of the ECO Member States Kazakhstan, Kyrgyzstan Uzbekistan and Turkmenistan, with extensions towards the Russian Federation, China and India, and branches connecting it to key ports in the ECO region, in Turkmenistan and Iran.

The **ECO Road Route 6** connects the Russian Federation with the port of Karachi in Pakistan. It starts from either border crossing points of Karakoga or Mamlyutka in Kazakhstan, onto Kyrgyzstan via Bishkek, then through Osh to the border with Tajikistan. In the territory of Tajikistan it reaches Dushanbe and continues through Kurgan Tube to the border with Afghanistan at Nizhny Pyanj, following a southern direction through Kabul to the border with Pakistan.. It continues through the Pakistani territory via Islamabad, taking then a southern direction ending up through Hyderabad at the port of Karachi. The route has the following three proposed extensions:

- From Astana in Kazakhstan to Kosmomolets, the border crossing point with the Russian Federation.
- From Almaty in Kazakhstan to Korgas, the border crossing point with China.
- From Rawalpindi in Pakistan, to Wagah, the border crossing point with India.

One branch is proposed, which is under construction, from Ratodero to the port of Gwadar within the territory of Pakistan.

The route serves the connection of the ECO Member States Kazakhstan, Kyrgyzstan Tajikistan, Afghanistan and Pakistan, with extensions towards the Russian Federation, China and India. It also connects to a key maritime port in Pakistan.

The **ECO Route 7** connects the western borders of Kazakhstan with the Russian Federation with Uzbekistan, ending up in India. It starts from the Janibek or Kaztalovka border crossing points with the Russian Federation, onto Chapaevo in Kazakhstan, and continues with a south-eastern direction to Beineu, the border crossing point with Uzbekistan. Then, it crosses the territory of Uzbekistan via the city of Bukhara, ending up at the border crossing

point with Afghanistan, Termez. It follows through Afghanistan via Kabul, onto Pakistan through the border crossing point of Peshawar, ending up at Wagah, border point with India.

The route has two proposed extensions, one from Bukhara in Uzbekistan, towards China, and one from Kabul in Afghanistan towards Munabao, the southern border with India.

Two branches are also proposed, one of which is under construction, from Ratodero to the port of Gwadar within the territory of Pakistan. The other starts from Hyderabad in Pakistan to the ports of Karachi, and/or Bin Qasim.

The route serves the connection of the ECO Member States Kazakhstan, Uzbekistan, Afghanistan and Pakistan, with extensions towards the Russian Federation, China and India. It also connects with key maritime ports in Pakistan.

Table 3.1-Road Route 1

ROUTE Number	From-To
<b>ROUTE 1A</b>	Turkey
	(Bulgaria border) Kapikule/(Greece border) Ipsala-Istanbul-Sakarya-Duzce- Gerede-Merzifon-Amasya- Erzurum-Agri-Gurbulak-(border with Iran)
	Islamic Republic of Iran
	(border with Turkey)- Bazargan-Tabriz-(Miyaneh)-Zanjan-Qavzin-Tehran-Qom-Yazd-Kerman-Bam-Zahedan-Mirjaveh-(border with Pakistan)
	Pakistan
	(Border with Iran)-Taftan -(N40)-Nok Kundi-Quetta(N-65)-Rohri (N-5)-Bahawalpur- Multan (N-5)-Khanewal--Lahore-Wagah-(border with India)
<b>Extensions</b>	
<b>ECO-ROAD 1A-E-A (IRAN)</b>	Qavzin-Hamedan-Kermanshah-Khosravi/Illam-Mehran-(border with Iraq)
<b>Branches</b>	
<b>ECO-ROAD 1A-B-A (TURKEY)</b>	Merzifon-Samsun
<b>ECO-ROAD 1A-B-B (TURKEY)</b>	Gerede-Ankara-Aksaray-Icel-Mersin port

ROUTE Number	From-To
<b>ECO-ROAD 1A-B-C1</b> <b>(TURKEY)</b>	Sakarya-Bursa-Eskisehir-Afyon-Salihli-Izmir-Çeşme
<b>ECO-ROAD 1A-B-C2</b> <b>(TURKEY)</b>	Sakarya-Bursa-Eskisehir-Afyon-Salihli-Manisa-Menemen-Aliaga-(E87)-Candarli
<b>ECO-ROAD 1A-B-D</b> <b>(IRAN)</b>	Bam-Bandar e Abbas
<b>ECO-ROAD 1A-B-E</b> <b>(IRAN)</b>	Zahedan-Khash-Iranshahr-Chabahar port
ROUTE Number	From-To
<b>ROUTE 1B</b>	Turkey
	(Bulgaria border) Kapikule/(Greece border) Ipsala-Istanbul-Sakarya-Duzce- Gerede-Merzifon-Amasya- Erzurum-Agri-Gurbulak-(border with Iran)
	Islamic Republic of Iran
	(border with Turkey)- Bazargan-Tabriz-(Miyaneh)-Zanjan-Qavzin-Tehran-Garmsar-Semnan-Shahrud-Sabzevar-Neyshabur-Mashhad-Taybad-(border with Afghanistan)
	Afghanistan
	(border with Iran)-Herat- Aqcheh-Baba Morghab-Sheberghan (needs upgrade)-Mazar-e-Sharif-Baghlani-Sherhan (border with Tajikistan)
	Tajikistan
	(border with Afghanistan)-Nizhny-Dusti-Kurgan Tube- Dangara-Dushanbe-Labi Jar-Jirgental-(border with Kyrgyzstan)
	Kyrgyzstan
	(border with Tajikistan)- Karamyk-Sary Tash-Irkeshtam-(border with China) towards Kashgar (Kashi)
<b>Extensions</b>	

<b>ROUTE Number</b>	<b>From-To</b>
<b>ECO-ROAD 1B-E-A (IRAN)</b>	Qavzin-Hamedan-Kermanshah-Khosravi/Illam-Mehran-(border with Iraq)
<b>ECO-ROAD 1B-E-B (KYRGYZSTAN, KAZAKHSTAN)</b>	Sary Tash-Osh-Jalal Abab-Bishkek-Akzhol- (border with Kazakhstan)-Korday-Almaty-Kopkek-Korgas- (border with China) towards Kulya
<b>Branches</b>	
<b>ECO-ROAD 1B-B-A (TURKEY)</b>	Merzifon-Samsun
<b>ECO-ROAD 1B-B-B (TURKEY)</b>	Gerede-Ankara- Aksaray-Mersin
<b>ECO-ROAD 1B-B-C1 (TURKEY)</b>	Sakarya-Bursa-Eskisehir-Afyon-Salihli-Izmir-Çeşme
<b>ECO-ROAD 1B-B-C2 (TURKEY)</b>	Sakarya-Bursa-Eskisehir-Afyon-Salihli-Manisa-Menemen-Aliaga-(E87)-Candarli
<b>ECO-ROAD 1B-B-D (IRAN)</b>	Mashhad-Kerman-Sirjan-Bandar e Abbas
<b>ECO-ROAD 1B-B-E (IRAN)</b>	Taybad- Birjand-Zahedan-Chabahar
<b>ECO ROAD 1B-B-F (AFGHANISTAN, PAKISTAN)</b>	Herat-Kandahar-Spin Boldak-(border with Pakistan)-Chaman-Quetta-Surab-Hoshab-(under construction)-Gwadar
<b>ECO ROAD 1B-B-G (AFGHANISTAN, PAKISTAN)</b>	Herat-Kandahar-Spin Boldak-(border with Pakistan)-Chaman-Quetta-Rohri-Hyberabad-(M9)-Karachi
<b>ECO ROAD 1B-B-H (TAJIKISTAN, UZBEKISTAN,</b>	(Tajikistan) Dushanbe-Tursunzade- (border with Uzbekistan)- Uzum-Termez-(border with Afghanistan)-Khairaton-Mazar e Sharif

ROUTE Number	From-To
AFGHANISTAN)	

Table 3.2-Road Route 2

ROUTE Number	From-To
	Turkey
	(Bulgaria border) Kapikule/(Greece border) Ipsala-Istanbul-Sakarya-Duzce- Gerede-Merzifon-Amasya- Erzurum-Agri-Gurbulak-(border with Iran)
	Islamic Republic of Iran
	(border with Turkey)- Bazargan-Tabriz-(Miyaneh)-Zanjan-Qavzin-Tehran-Garmsar-Semnan-Shahrud-Sabzevar-Neyshabur-Mashhad-Sarakhs (border with Turkmenistan)
	Turkmenistan
	(border with Iran)-Serakhs-Tejen-Mary-Turkmenabad-Farab-(border with Uzbekistan)
	Uzbekistan
	(border with Turkmenistan)-Alat-Bukhara-Navoi-Samarkand-Jizzakh-Khavast-Syrdarya-Tashkent-Ghisht Koprik-(border with Kazakhstan)
	Kazakhstan
	(border with Uzbekistan)-Zhibek Zholy- Shymkent-Taraz-Sypatay Batyr-(border with Kyrgyzstan-section of route in Kyrgyzstan presented under Kyrgyzstan section)- Korday-Almaty-Kopkek-Zharkent-Korgas- (border with China) towards Kulya
	Kyrgyzstan
	(border with Kazakhstan)- Chaldayar-Bishkek-Akzhol-(border

ROUTE Number	From-To
ROUTE 2	with Kazakhstan)
<b>Extensions</b>	
<b>ECO-ROAD 2-E-A (UZBEKISTAN,TAJIKISTAN, KYRGYZSTAN)</b>	Samarkand-(border with Tajikistan)-Panjakent-Ayni- Dushanbe- Labi Jar-Jirgental-(border with Kyrgyzstan)-Karamyk-Sary Tash-Irkeshdam-(border with China) towards Kashgar (Kashi)
<b>Branches</b>	
<b>ECO-ROAD 2-B-A (TURKEY)</b>	Merzifon-Samsun
<b>ECO-ROAD 2-B-B (TURKEY)</b>	Gerede-Ankara-Aksaray-Icel-Mersin port
<b>ECO-ROAD 2-B-C1 (TURKEY)</b>	Sakarya-Bursa-Eskisehir-Afyon-Salihli-Izmir-Çeşme
<b>ECO-ROAD 2-B-C2 (TURKEY)</b>	Sakarya-Bursa-Eskisehir-Afyon-Salihli-Manisa-Menemen- Aliaga-(E87)-Candarli
<b>ECO-ROAD 2-B-D (IRAN)</b>	Mashhad-Taybad-Birjand-Zahedan-Bam-Bandar e Abbas
<b>ECO-ROAD 2-B-E (IRAN)</b>	Mashhad-Taybad- Birjand-Zahedan-Chabahar

Table 3.3- Road Route 3

ROUTE Number	From-To
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ROUTE Number	From-To
<b>ROUTE 3</b>	Azerbaijan
	(border with Russia)-Samur (M1)-Baky-Alat-Lenkeran-Astara-(border with Iran)
	Islamic Republic of Iran
	(border with Ajerbaijan)-Astara-Bandar e Anzali-[Rasht-Qazvin UNDER CONSTRUCTION]-Tehran-Qom-Yazd-Kerman or Sirjan-Bandar e Abbas
<b>Branches</b>	
<b>ECO-ROAD 3-B-A (IRAN)</b>	Qazvin-Saveh-Arak-Khorram Abad-Ahvaz-Bandar e Emam Khomeyni or Bandar e Bushehr
<b>ECO-ROAD 3-B-B (IRAN)</b>	Kerman-Bam-Iranshahr-Chabahar
<b>ECO-ROAD 3-B-C (CASPIAN SEA KAZAKHSTAN,IRAN)</b>	Bandar e Anzali missing link ferry to Aktau
<b>ECO-ROAD 3-B-D (CASPIAN SEA TURKMENISTAN,IRAN)</b>	Bandar e Anzali missing link ferry to Turkmenbashi

Table 3.4- Road Route 4

ROUTE Number	From-To
	Kazakhstan
	(border with Russia) [Ozinki-Kamenka-Urals] or [Zhelaevo (Pogotaevo)-Uralsk]- Chapaevo-Atyrau-Dossor- Beineu-Aktau- Zhana Ozen-(border with Turkmenistan)
	Turkmenistan

ROUTE Number	From-To
ROUTE 4	(border with Kazakhstan)-Bekdash-Turkmenbashi-Berekek-Serdar-Goduroolum-(border with Iran)
	Islamic Republic of Iran
	(Border with Turkmenistan)- Pol-Shahrud (needs upgrade)-Damghan-Meybod-Yazd (needs upgrade)-Kerman-Bam or Sirjan-Bandar e Abbas
<b>Branches</b>	
<b>ECO-ROAD 4-B-A (IRAN)</b>	Kerman-Bam-Chabahar

Table 3.5- Road Route 5

ROUTE Number	From-To
ROUTE5	Kazakhstan
	(border with Russia)-Mamlyutka or Karakoga-Petropavlorsk-Astana-Karaganda-Akchatau-Burubaytal-Almaty-Korday- (border with Kyrgyzstan: the section in Kyrgyzstan is under Kyrgyzsta)- Sypatay Batyr-Taraz-Shymkent-Zhibek Zholy-(border with Uzbekistan)
	Kyrgyzstan
	(border with Kazakhstan)-Akzhol--Bishkek- Chaldayar- (border with Kazakhstan)
	Uzbekistan
	(Border with Kazakhstan)-Ghisht Koprik-Tashkent-Syrdarya-Khavast-Jizzakh-Samarkand-Navoi-Bukhara-Alat-(border with Turkmenistan)
	Turkmenistan
	(border with Uzbekistan)-Farab-Turkmenabad-Mary-Tejen-Serakhs-(border with Iran)

ROUTE Number	From-To
	Iran
	(Border with Turkmenistan)-Sarakhs-Mashhad-Gonabad ot Taybad-Birjand-Zahedan-Khash-Iranshahr-Chabahar
<b>Extensions</b>	
<b>ECO-ROAD 5-E-A (KAZAKHSTAN)</b>	Almaty-Kopkek-Zharkent-Korgas- (border with China) towards Kulya
<b>ECO ROAD 5-E-B (KAZAKHSTAN)</b>	Astana-Ruzayevka-Kostanai-Kosmomolets-(border with Russia)
<b>ECO ROAD 5-E-C (KAZAKHSTAN)</b>	Shymkent-Kazalinsk-Karabutak-Aktobe-Uralsk-(border with Russia)
<b>ECO-ROAD 5-E-D (UZBEKISTAN, TAJIKISTAN, KYRGYZSTAN)</b>	Samarkand-(border with Tajikistan)-Panjakent-Ayni- Dushanbe-Labi Jar-Jirgental-(border with Kyrgyzstan)-Karamyk-Sary Tash-Irkeshtam-(border with China) towards Kashgar (Kashi)
<b>Branches</b>	
<b>ECO-ROAD 6-B-A (IRAN)</b>	Mashhad-Kerman-Bam or Sirjan-Bandar e Abbas
<b>ECO-ROAD 6-B-B (TURKMENISTAN)</b>	Mary- Ashgabat-Turkmenbashi

Table 3.6- Road Route 6

ROUTE Number	From-To
	Kazakhstan
	(border with Russia)-Mamlyutka or Karakoga-Petropavlorsk-Astana-Almaty-Korday- (border with Kyrgyzstan)
	Kyrgyzstan

ROUTE Number	From-To	
<b>ROUTE 6</b>	(border with Kazakhstan)-Akzhol-Bishkek-Osh-Sary Tash-Karamyk (border with Tajikistan- Tajikistan	
	(border with Kyrgyzstan)-Labi Jar-Dushanbe-Kurgan Tube-Nizhny Pyanj (border with Afghanistan) Afghanistan	
	(border with Tajikistan)-Kabul-Jalal Abad-Towrkham (border with Pakistan) Pakistan	
	(border with Afghanistan)-Peshawar-Islamabad-Rawalpindi-Pindi Bhattian-Multan-Dera Ghazi Khan or Lodhran-Ratodero-Hyderabad (M-9)- -Karachi	
	<b>Extensions</b>	
	<b>ECO ROAD 6-E-A (KAZAKHSTAN)</b>	Astana-Karasu or Auliyekol-Kostanai-Kosmomolets-(border with Russia)
<b>ECO ROAD 6-E-B (PAKISTAN)</b>	Rawalpindi-Wazirabad-Lahore-Wagah-(border with India)	
<b>ECO ROAD 6-E-C (KYRGYZSTAN)</b>	Almaty-Kokpek-Korgas-(border with China) towards Kulya	
<b>Branches</b>		
<b>ECO-ROUTE 6-B-A (PAKISTAN)</b>	Ratodero-Khuzdar-Awaran-Gwadar (new alignment/construction)	

78- Road Route 7

ROUTE Number	From-To
	Kazakhstan
	(border with Russia)-Janibek or Kaztalovka-Chapaevo-Makhambet-

<b>ROUTE Number</b>	<b>From-To</b>
<b>ROUTE 7</b>	Atyrau-Kulsary-Beineu-(border with Uzbekistan)
	Uzbekistan
	(border with Kazakhstan)-Beleuli-Nukus-Bukhara-Karshi-Termez-(border with Afghanistan)
	Afghanistan
	(border with Uzbekistan)-Khairaton-Mazar e Sharif-Charikar-Kabul-Jalal Abad-Towrkham-(border with Pakistan)
	Pakistan
	(border with Afghanistan)-Peshawar-(M1)-Rawalpindi(M-2)-Lahore-Wagah-(border with India)
<b>Extensions</b>	
<b>ECO-ROAD 7-E-A (UZBEKISTAN, KAZAKHSTAN, KYRGYZSTAN)</b>	Bukhara-Navoi-Samarkand-Jizzakh-Khavast-Syrdarya-Tashkent-Chisht Koprik-(border with Kazakhstan)-Zhibek Zoly-Shymkent-Taraz-Sypatay-Batyr-(border with Kyrgyzstan)-Chaldayar-Bishkek-Akzhol-(border with Kazakhstan)-Korday-Almaty-Kopkek-Zharkent-Korgas-(border with China) towards Kulya
<b>ECO ROAD 7-E-B (AFGHANISTAN, PAKISTAN)</b>	Kabul-Kandahar-Spin Boldak-(border with Pakistan)-Chaman-Quetta-Sibi-Sukkur-Rohri-Hyberabad-Khokhropar-(border with India) towards Munabao
<b>Branches</b>	
<b>ECO-ROAD 7-B-A (PAKISTAN)</b>	Hyberabad-(M9)-Karachi-Bin Qasim port
<b>ECO-ROAD 7B-B (PAKISTAN)</b>	Sukkur-[new alignment/under construction:Ratodero-Khuzdar-Awaran-Gwadar]

## **4. METHODOLOGY FOR PROJECT PRIORITIZATION**

### **4.1 Introduction**

The framework for the prioritization of new proposed road projects to be included in the road network development plan for the ECO region entails the development of a methodology for the identification of proposed projects and their prioritisation according to specified implementation time periods with the scope to develop an investment plan for road transport infrastructure in the ECO region.

The method proposed is straightforward, and is based on the well established Multi-Criteria Analysis (MCA). The application of the method will identify these projects that are likely to be implemented in selected time periods (short term, medium term, long term) and at the same time address the specific objectives of the countries and the international character of the projects.

This method establishes preferences between options by reference to an explicit set of objectives that the decision making body (e.g. Ministry of Transport/Infrastructure) has identified, and for which it has established measurable criteria to assess the extent to which the objectives have been achieved. These criteria are defined through observations, discussions, experimentations and trial-and-error processes. Although there is an inherent subjectivity associated with this method, it is believed that it can bring a degree of structure, analysis and openness to classes of decision. The preferences are merely related to the time frame/periods of the projects implementation. Four time frames/periods are selected, as will be described in the following.

Consequently, no evaluation is carried out for the projects, since this would require a vigorous feasibility study for each project with the same measurement values and then cross-evaluation of the projects between the participating countries. Nevertheless, in the case that the countries have carried out an evaluation/feasibility study, the results of such study (e.g. IRR) will be taken into consideration.

### **4.2 Overview of the Methodology**

The proposed methodological framework for project prioritization is structured in three phases, i.e. identification, analysis and time period classification, in order to secure the inclusion of the sum of all proposed transport infrastructure projects in the ECO territory in the prioritization exercise.

The definition of “project”, as specified for the purpose of the methodology, is the following:

**Definition of Project:** A project is considered a new construction or the upgrade/rehabilitation of a transport infrastructure section. Also a project can be the construction or the upgrade/rehabilitation of a transport terminal/port (maritime or inland waterways) etc. The infrastructure section can vary in length however it should constitute an expenditure of almost 10 million \$. An exception of the latter mentioned rule applies if the project involves a missing link or a bottleneck.

The phases of the proposed methodology are described in detail in the following sections.

**(i) Phase A-Identification**

The identification phase entails the recording of prospective projects, based on their readiness and funding possibilities, as well as the common-shared objectives of responsible authorities, national or international, and the collection of readily available information/ data regarding these projects.

In this phase, initially, the distinction of projects in two major categories is made, that is, those with committed funding and those without committed funding. Obviously, projects with secured funding can be directly considered viable and with a high possibility to be completed in the near future. For projects without committed funding or partly committed funding, further evaluation is carried out in order to set implementation priorities, against common shared objectives between national and international authorities (See next section on Analysis Phase).

It should be noted, that the identification, as well as the analysis, is based on data collected from the countries, and thus, projects, for which no data is provided, will automatically be classified as last priority in terms of implementation.

**(ii) Phase B – Analysis**

The Multi-Criteria Analysis (MCA) method is used for the analysis of the identified unfunded projects. The MCA is selected due to a number of factors, such as the very preliminary level of definition of most unfunded -or partly funded projects, the lack of specific information on the current status, the limited knowledge on transport demand perspectives and the variety in types of projects.

Such a method will allow available information to be taken into account on projects, even at their very preliminary level of definition, as well as - to a certain extent –any background data. At the same time, some specific elements of particular interest to the decision-makers may be introduced.

The objective of this phase is to derive scores (degree of performance) for the unfunded –or partly funded- projects, which will be used as an indicator for the application of Phase C of the proposed methodology. To this end, Phase B, includes the following steps:

**(a) Definition of criteria**

- (b) Measurement of criteria
- (c) Criteria weighting
- (d) Derivation of total score per project

**(a) Definition of Criteria**

Since the assessment of a group of projects in terms of their social impacts is a key objective (the projects will be mainly financed with public funds, national or international), the criteria are defined according to two basic principles, i.e. the functionality and coherency of the transportation network to be developed including strategic/ political concerns of the national authorities (or international in the case of co-financing by them), and its social and environmental impacts.

Therefore, based on the above two fundamental orientations/ principles of the process, the following criteria are introduced:

1. Serve for the development of a transport corridor within the ECO countries (C<sub>1</sub>)
2. Serving international connectivity (C<sub>2</sub>)
3. Serve landlocked countries (C<sub>3</sub>)
4. Social and economic impact (C<sub>4</sub>)
5. Infrastructure/missing links (C<sub>5</sub>)
6. Have high degree of urgency due to importance attributed by the national authorities and/or social interest (C<sub>6</sub>)
7. Environmental and social impact (C<sub>7</sub>)
8. Pass socio-economic viability test (C<sub>8</sub>)

**(b) Measurement of criteria**

Criteria can be quantified for each of the projects under consideration either by direct classification according to measurable characteristics, or by “quality attributes”, assessed by expert judgment. Such subjective measurement is unavoidable in a multi-criteria analysis, whenever available information is not precise or reliable enough. To this end, the measurement of the defined criteria will be as follows:

**C1: ON-OFF CRITERION**

Serve for the development of a transport corridor within the ECO countries

YES  NO  ,

**C2: Is the project serving international connectivity?**

YES  NO

If yes, is it expected to:

A: Greatly improve connectivity, B: Significantly improve connectivity, C: Somewhat improve connectivity, D: Slightly improve connectivity, E: Does not improve connectivity.

**C3:** Will the project promote solutions to the particular transit transport needs of the landlocked countries?

YES  NO

If yes the project is providing solution:

A: Greatly, B: Significantly, C: Somewhat, D: Slightly, E: Does not

**C4:** Will the project connect low income and/or least developed countries/regions with ECO member states, major European, and Asian markets?

YES  NO

If yes the project is providing connection:

A: Greatly, B: Significantly, C: Somewhat, D: Slightly, E: Does not

**C5:** Will the project cross natural barriers, removes bottlenecks, raises substandard sections to meet international standards, or fills missing links?

YES  NO

If yes, the project contributes to the above:

A: Greatly, B: Significantly, C: Somewhat, D: Slightly, E: Does not

**C6:** Have high degree of urgency due to importance attributed by the national authorities and/or social interest

YES  NO

The project is:

A: In the national plan and immediately required (for implementation up to 2013), B: In the national plan and very urgent (for implementation up to 2016), C: In the national plan and urgent (for implementation up to 2020), D: In the national plan but may be postponed until after 2020, E: Not in the national plan.

**C7:** Will the project potentially create negative environmental or social impacts (pollution, safety, etc)? YES  NO

If yes, the magnitude of impact is:

A: No impact, B: Slight impact, C: Moderate impact, D: Significant impact, E; Great impact.

**C8:** The project is expected to increase traffic (both existing and generated):

A: More than 15%, B: 10-15%, C: 5- 10%, D: less than 5%, E: Will not affect traffic

**(c) Criteria weighting**

The default set of criterion weights defined by the Consultant, which are going to be used for the evaluation of projects is presented in Table 4.1 below.

**TABLE 4.1-Criteria Weights**

<b>Criterion Weight</b>	<b>Description of Criterion</b>	<b>Default Weight</b>
<b>W<sub>C1</sub></b>	Serve for the development of a transport corridor within the ECO countries	0.2
<b>W<sub>C2</sub></b>	Serving international connectivity	0.15
<b>W<sub>C3</sub></b>	Serving landlocked countries	0.1
<b>W<sub>C4</sub></b>	Social and economic impact	0.15
<b>W<sub>C5</sub></b>	Infrastructure/missing links	0.1
<b>W<sub>C6</sub></b>	Have high degree of urgency due to importance attributed by the national authorities and/or social interest	0.1
<b>W<sub>C7</sub></b>	Environmental and social impact	0.1
<b>W<sub>C8</sub></b>	Pass socio-economic viability test	0.1
<b>Total</b>		<b>1</b>

The work will be advanced on the basis of the default weights proposed in the above and in case of disagreement, country experts may fill up the respective column of their country with their proposed scores, providing explanations on the reasons for changing the scores, and return it.

In order to make the various criterion scores compatible, it is necessary to transform them into one common measurement unit or else transform “physical scale” measurement into a common “artificial scale” measurement. The criteria quantification is not based on a sophisticated utility function, but on a simple linear function, which connects threshold values of an artificial scale with threshold values of a physical scale.

The artificial scale chosen is: A = 5, B = 4, C = 3, D = 2, E = 1, with 5 being the highest value. Therefore:

$$C_{Ji} \in [1,5] \quad (1)$$

Where:

J = A or B and

i = 1, ..., 5

At this stage, the weighing of the criteria takes place. The Pair Comparison Matrix is used as a method of weighting, chosen because it is a simple, transparent and widely accepted procedure.

The resulting criteria weights add up to unity, as shown below:

$$W_{Ji} \in [0,1] \text{ and}$$

$$\sum_{J=A}^C \sum_{i=1}^5 W_{Ji} = 1 \quad (2)$$

Where:

J = A, B (*representing the criteria dimensions*)

i = 1, ..., 5 (*representing the number of criteria in each dimension*)

#### ***(d) Derivation of total score per project***

To derive the project's **total performance score** the following function (3) is used:

$$T.S._{Project} = \sum_{J=A}^C \sum_{i=1}^5 C_{Ji} * W_{Ji} \quad (3)$$

where:

$$C_{Ji} \in [1,5]$$

$$W_{Ji} \in [0,1]$$

J = A or B and

$$i = 1, \dots, 5$$

To this end,  $T.S._{Project} \in [1,5]$  or else the Total Performance Score – for all dimensions together - of each project in each country will be the weighted sum of the criteria scores and will take values between 1 (the lowest) and 5 (the highest).

#### **(iii) Phase C – Time Period Classification**

In the final phase, the selection of projects is carried out according to their “performance” score. Based on the latter, projects are classified into four Time Period Categories (I, II, III and IV), as follows:

- If the project scores between 4-5 then it belongs to **Category I**.
- If the project scores 3 -4 then it belongs to **Category II**.
- If the project scores 2 -3 then it belongs to **Category III**.
- If the project scores 1-2 then it belongs to **Category IV**.

Finally, the classification of time periods is the following:

- **Category I:** projects, which have funding secured and are on-going and expected to be completed in the near future (**up to 2013**).
- **Category II:** projects, which may be funded or their plans are approved and are expected to be implemented rapidly (**up to 2016**).
- **Category III:** projects requiring some additional investigation for final definition before likely financing and implemented (**up to 2020**).
- **Category IV:** projects requiring further investigation for final definition and scheduling before possible financing, including projects, for which insufficient data existed. (**most likely to be implemented after 2020**)

### 4.3 Projects Prioritisation Presentation

The scope of this section is to analyse the information on the transport infrastructure projects based on country inputs, prioritize these through the application of the proposed methodology and include them in the road network development plan of the ECO region. The goal is to present a consistent and realistic short, medium and long term investment strategy for the identified ECO Priority Road Routes. This includes an extensive inventory of the road infrastructure projects for the participating countries, together with their estimated budget and pragmatic investment time plan for their implementation.

#### Input received

Out of the 8 countries participating in this project, all countries submitted data through their National Experts on the projects under evaluation.

#### Data presentation

Each project was identified with a unique Project ID specifying the country, the road transport mode and a specific number. The following abbreviations were introduced for country identification in Project ID: Afghanistan (AFG), Azerbaijan (AZE), Belarus (BLR), Iran (IRN), Kazakhstan (KAZ), Kyrgyzstan (KGZ), Pakistan (PAK), Tajikistan (TJK), AND Turkey (TUR). The abbreviation RLW was introduced in the Project ID.

Table 4.2 presents the number of projects submitted by each country per type of infrastructure under the two distinct categories, that is, those that are along proposed ECO routes, and those that are of national importance, thus belonging to the Reserve Category.

*Annex II* presents the database of project information, for all projects considered for each of the participating countries.

**TABLE 4.2-Number of Projects Submitted**

Country	Total Projects	ECO Projects
Afghanistan	-	-
Azerbaijan	-	-
Iran	17	7
Kazakhstan	9	8
Kyrgyzstan	7	4
Pakistan	25	22
Tajikistan	4	3
Turkey	3	3
<b>Total</b>	<b>65</b>	<b>47</b>

#### 4.4 ECO Priority Prioritisation Exercise

This section presents the results of the application of the prioritisation methodology on the projects considered at the country level. To this end, projects together with their associated costs are presented by the following priority categories:

- **Category I:** projects, which have funding secured and are on-going and expected to be completed in the near future (up to 2013).
- **Category II:** projects, which may be funded or their plans are approved and are expected to be implemented rapidly (up to 2016).
- **Category III:** projects requiring some additional investigation for final definition before likely financing and implemented (up to 2020).
- **Category IV:** projects requiring further investigation for final definition and scheduling before possible financing, including projects, for which insufficient data existed. (most likely to be implemented after 2020)
- **Completed projects**
- **Projects along other routes and of national importance**

It should be noted that the application of the methodology was based on the data received by each participating country. Nevertheless, the application of the methodology was not feasible in a number of cases due to limited availability of data. To this end, in the case of limited data availability, the Consultant attempted to either collect the missing information from other sources, or categorise the project based on the available data. The cases, for which the application of the methodology was carried out, are presented in detail in *Annex IV*.

In addition, projects along other routes of national importance were not evaluated and hence not included in the prioritisation exercise.

Project costs are depicted in Million United States Dollars. Where necessary, an average conversion rate for year 2011 was used<sup>3</sup>.

### **Afghanistan**

*Afghanistan did not provide any information on road projects to date.*

### **Azerbaijan**

Azerbaijan proposed one road project, which was not along the proposed ECO Road Routes, and hence, was not included in the analysis.

### **Iran**

Iran proposed 17 road projects, out of which 7 are along proposed ECO routes, as per following:

- 4 projects with committed funding are under construction, and hence, were classified as Category I.
- 3 projects were classified as Category II, based on the application of the methodology.

According to available information 93% of the funding has been secured.

The above information complete with project costs is summarized in Table 4.3 below.

**Table 4.3-Iran Prioritisation Results Summary**

	All	I	II	III	IV	Completed
<b>No. of road projects</b>	<b>7</b>	4	3			
<b>Cost* of road projects</b>	<b>417</b>	386	31			

\* in million USD

### **Kazakhstan**

Kazakhstan proposed 9 road projects, out of which 8 are along proposed ECO routes as per the following:

<sup>3</sup> <http://www.x-rates.com/d/USD/EUR/hist2011.html>

- 4 were classified as Category I, based on the application of the methodology.
- 4 were classified as Category II, based on the application of the methodology.

According to available information 30% of the funding has been secured.

The above information complete with project costs is summarized in Table 4.4 below.

**Table 4.4-** Kazakhstan Prioritisation Results Summary

	All	I	II	III	IV	Completed
<b>No. of road projects</b>	<b>8</b>	4	4			
<b>Cost* of road projects</b>	<b>10109</b>	3081	7028			

\* in million USD

### Kyrgyzstan

Kyrgyzstan proposed 7 road projects, out of which 4 are along proposed ECO routes, as per the following:

- 2 have been completed.
- 2 are under construction and were classified as Category I.

According to available information 100% of the funding has been secured.

The above information complete with project cost is summarized in Table 4.5 below.

**Table 4.5-** Kyrgyzstan Prioritisation Results Summary

	All	I	II	III	IV	Completed
<b>No. of road projects</b>	<b>4</b>	2				2
<b>Cost* of road projects</b>	<b>290</b>	83				207

\* in million USD

### Pakistan

Pakistan proposed 25 road projects, out of which 22 are along proposed ECO routes, as per the following:

- 3 are completed
- 11 were classified as Category I, based on the information available.
- 4 were classified as Category II, based on the information available.
- 4 were classified as Category IV, based on the information available.

According to available information 72% of the funding has been secured.

The above information complete with project cost is summarized in Table 4.6 below.

**Table 4.6-** Pakistan Prioritisation Results Summary

	All	I	II	III	IV	Completed
<b>No. of road projects</b>	<b>22</b>	11	4		4	3
<b>Cost* of road projects</b>	<b>8598</b>	6119	1054		1341	84

\* in million USD

### **Tajikistan**

Tajikistan proposed 4 road projects, out of which 3 are along proposed ECO routes, as per the following:

- 1 has been completed, according to available information.
- 1 is under construction, and, hence, was classified as Category I.
- 1 was classified as Category II, based on the application of the methodology.

According to available information 64% of the funding has been secured.

The above information complete with project costs is summarized in Table 4.7 below.

**Table 4.7-** Tajikistan Prioritisation Results Summary

	All	I	II	III	IV	Completed
<b>No. of road projects</b>	<b>3</b>	1	1			1
<b>Cost* of road projects</b>	<b>329</b>	119	120			90

\* in million USD

### **Turkey**

As a big country, Turkey has several ongoing and planned projects on road infrastructure that were proposed. Since the majority of on-going projects are close to completion, these were not evaluated in the present report. To this end, the projects proposed as on-going or planned for the new proposed routes were considered, out of which 3 were along identified ECO routes, as per the following:

- 1 was classified as Category I, according to available information.
- 1 was classified as Category II, according to available information.
- 1 was classified as Category IV, according to available information.

According to available information 1% of the funding has been secured.

The above information complete with project costs is summarized in Table 4.8 below.

**Table 4.8-** Turkey Prioritisation Results Summary

	All	I	II	III	IV	Completed
<b>No. of road projects</b>	<b>3</b>	1	1		1	
<b>Cost* of road projects</b>	<b>1547</b>	15	1482		50	

\* in Million USD

#### 4.5 Summary

In total 65 projects were proposed by the participating countries, out of which **47 road projects** have been identified to be along the proposed ECO Road Routes with an estimated total cost of **21,29 Billion USD**.

Out of these **47 projects**:

- 23 projects belong to Category I
- 13 projects belong to Category II
- 5 projects belong to Category IV
- 6 projects have been completed

The above results together with project costs are presented in Table 4.9.

**Table 4.9-**Summary Results of ECO Road Projects

	All	Per Priority Category				
		I	II	III	IV	Completed
<hr/>						

<b>No. of road projects</b>	<b>47</b>	23	13	-	5	6
<b>Cost* of road projects</b>	<b>21,29</b>	9,803	9,714		1,391	0,381

*\*in Billion USD*

The **percentage of secured funding** for the total number of ECO Road Projects is **48%**.

Further to the above, the results of the prioritisation exercise are summarised per priority category:

- 49% of the road projects belong to Category I, with an estimated value of \$9,8 billion, representing 46% of the total investment cost.
- 28% of the road projects belong to Category II, with an estimated value of \$9.7 billion, representing 46% of the total investment cost.
- 11% of the road projects belong to Category IV, with an estimated value of \$1,4 billion, representing 6% of the total investment cost.
- 13% of the road projects have been completed, with an estimated value of \$0,4 billion, representing 2% of the total investment cost.

#### **4.6 ECO Road Network Development Plan**

The analysis of the road projects implementation plans demonstrated that:

- 13% of the projects for have been completed.
- 49 % of the proposed projects for the ECO Road Network are expected to be completed until 2013.
- 28 % of the proposed projects for the ECO Road Network are expected to be completed until 2016.
- For 11% of the proposed projects for the ECO Road Network, it is unknown when would be completed, since further investigation is necessary before definition, scheduling and possible financing.

The ECO Road Transport Network Development Investment Plan is depicted in Table 4.10 with related project costs presented in Million USD. The available/secured percentage of funding is also shown in Table 4.10. The implementation of the Road Network will follow the time plan presented in Table 4.11.

**Table 4.10-** ECO Road Transport Network Development Investment Plan

ROAD PROJECTS							
Country	Total Cost	PRIORITY CATEGORY					% Funding Secured
		I	II	III	IV	COMPLETED	
Afghanistan							
Azerbaijan							
Iran	417	386	31				93%
Kazakhstan	10109	3081	7028				30%
Kyrgyzstan	290	83	0			207	100%
Pakistan	8598	6119	1054		1341	84	72%
Tajikistan	329	119	120			90	64%
Turkey	1547	15	1482		50		1%
<b>Total</b>	<b>21290</b>	<b>9803</b>	<b>9714</b>	<b>0</b>	<b>1391</b>	<b>381</b>	<b>48%</b>

**Table 4.11-** ECO Road Transport Network Development Time Plan

Country	Projects	EATL Projects Implementation Progress					Project Funding
		Completed	Up to 2013	2013-2016	2016-2020	2020-unknown	% Secured
AFG							
AZE							
IRN	7	0%	57%	43%	0%	0%	93%
KAZ	8	0%	50%	50%	0%	0%	30%
KGZ	4	50%	50%	0%	0%	0%	100%
PAK	22	14%	50%	18%	0%	18%	72%
TJK	3	33%	33%	33%	0%	0%	64%
TUR	3	0%	33%	33%	0%	33%	1%
<b>ECO NETWORK</b>	<b>Projects</b>	<b>EATL Projects Implementation Progress</b>					<b>% Funding Secured</b>
	<b>47</b>	<b>13%</b>	<b>49%</b>	<b>28%</b>	<b>0%</b>	<b>11%</b>	<b>48%</b>

#### 4.7 Conclusion

A total of 47 road infrastructure projects along a total length of approximately 11,453 km of road network, were proposed in the study and should be included in the ECO Priority Road Network Development Plan. The implementation of the proposed priority ECO network as a whole will require the approximate sum of \$21,29 billion, out of which approximately 48% has been secured.

According to the results of the analysis, 13% of the projects have been completed, while nearly half of the proposed projects are planned to be completed by year 2013. On the other hand, the analysis yielded that for a 11% of the ECO road network, it is unknown when it would be completed, since further investigation is necessary before definition, scheduling and possible financing of the proposed infrastructure projects. It should, however, be noted that lack of information with regard to the status, start and end dates, sources of funding and percentage of secured funding of proposed projects contributed significantly to the latter outcome. Hence, the above figures could potentially be different, should information had become available.

Finally, in addition to the projects located along the identified priority ECO Road Routes, most participating countries proposed infrastructure projects beyond those specified routes and, thus, these were considered to be of national importance and were not considered in the analysis. Depending on the significance and priorities set for such national projects, as well as their potential to impact the established connections with ECO Road Routes, it is proposed that these projects are considered for inclusion in a future revision of the ECO Road Network.

## 5. COUNTRY REPORTS

This chapter presents the Country Reports for each participating country in the study, detailing current conditions on road transport infrastructure, as well as National Transport Plans and related recommendations, as per the input received from the individual National Experts.

### 5.1 Afghanistan

Afghanistan has a strategic geographical position, bordering on six countries. Nevertheless the poor condition and lack of efficient transport infrastructure network hinder the movement of passengers and goods within the country constraining post-war economic recovery and development. The major constraints to reconstruction and development of the transport sector are inadequate infrastructure, limited government capacity, and Conflicts and weak security still existing in the country.

Afghanistan's current transport network has roads, railway, airports, and inland waterways. The official road network is 38,500 kilometers, which include 330 km of regional roads, 4,700 km of national roads, 9,700 km of provincial roads, 17,000 km of rural roads, and 3,800 km of urban roads. At present, the road network is incomplete and unable to meet the growing transport demands. Various parts of the country are poorly connected or not connected at all. Four provincial capitals remain unconnected to the regional network isolating them from domestic and regional markets. Before 2001, investment in road reconstruction and maintenance was negligible. Since then it has improved, although only 7% of the total road length is paved, while approximately 70% of inter-provincial and inter-district roads are in a poor state of repair.

The following road border crossings are operational:

- With Pakistan (2,430 km):
  - Towr Kham,
  - Wesh (or Chaman),
  - Barikot,
  - Torkhan,
  - Husain Nika,
  - Speenboldak;
- With Iran (936 km):
  - Dogharoun (Iran) - Islam Quala (Afghanistan),
  - Zarang;
- With Tajikistan (1,206 km):
  - Ishkashim,
  - Across the Amu Darya from Panj-e Payon (Nizhny Panj) in Tajikistan - Shir Khan (Afghanistan);
- With Turkmenistan (744 km):
  - Serkhetabat (or Gushgy/Kushka) in Turkmenistan - Tourghondi on Afghan side,
  - Imam Nazar;
- With China (76 km): none;

- With Uzbekistan (137 km):
  - Across the friendship bridge at Hairatan (Termez).

Regional connectivity is underdeveloped primarily due to cross-border bottlenecks, such as inadequate link roads and facilities, inadequate customs facilities, need for transit permits, lack of vehicle standard and axle load controls, as well as visa regulations, unofficial charges, and the protection given to local trucking. Transit agreements are either nonexistent or poorly enforced.

### ***National Plans, Policies and Infrastructure Investment***

The Afghanistan National Development Strategy (ANDS) adopted by the Government of Afghanistan (GOA) in April 2008, is the country's main strategic platform for development over the period 2008–2020. In addition, GOA has agreed with the strategy adopted by the Central Asia Regional Economic Cooperation (CAREC) program, which is aimed at developing six corridors across the region and all through Afghanistan. Afghanistan's road network is being improved with external assistance mainly by the Asian Development Bank, the World Bank and the Government of Japan.

**Source:** *ADB Report (2010) -Afghanistan Railway Development Study Financed by the Asian Development Bank (ADB)*

## 5.2 Azerbaijan

The following links form the key arteries of the country's road network:

### 1. *E-119 (M1) Baku – Russian Federation border*

Baku – Khirdalan	km 0-16	Put in operation in 2009
Khirdalan – Gendob	km 16-134	Put in operation in 2010
Gendob – Russian Federation border	km 134-198	Construction is in progress and provided end of construction in 2011

### 2. *E-60 (M2) Baku – Red bridge (Georgian border)*

Baku – Alat	km 0-69	Reconstruction with expansion
Alat – Hadjigabul	km 69-115	It is constructed and put in operation in 2004
Hadjigabul – Kurdamir	km 115-200	It is constructed and put in operation in 2008
Kurdamir – Ujar	km 200-246	Put in operation in 2011
Ujar – Yevlakh	km 246-299	Put in operation in 2010
Yevlakh – Ganja	km 299-388	It is constructed and put in operation in 2011
Ganja – Gazakh	km 388-482	Put in operation in 2005
Gazakh – Red bridge	km 482-520	Put in operation in 2011

### 3. *E-119 (M3) Alat – Astara (Islamic Republic of Iran border)*

Alat – Masalli	km 0-165	22 km of the road put in operation in 2010. The remained parts of construction are provided in the 2011.
Masalli – Astara	km 165-243	It is constructed and put in operation in 2012

### 4. *E-002 (M6) Hajigabul – Minjivan (Armenian border)*

Hajigabul – Bahramtepe	km 0-108	The beginning of construction is provided in 2012
Bahramtepe – Horadiz	km 108-189	The beginning of construction is provided in 2012

Horadiz – Armenian border      km 189-286      occupied

In addition, the following missing connections have been identified for the road network:

- E-119 (M1) Baku – Russian Federation border
  - Sumgayit – G.Z.Tagiyev - problems in operation of roundabout road, Sumgayit's transport movement has been directed through settlement G.Z.Tagiyev.
- E-60 (M2) Baku – Red bridge (Georgia border)
  - Ganja circle road- On distance of road of 0,8 km radiuses above specification R-300-500, on distance of road of 0,2 km
  - Ganja – Gazakh - On road Ganja – Gazakh there are problem sites: 439-441 km (region Agstafa), R-90 m. The distance of visibility is not provided; 371-430 km R-200 m a bias in length of 50-60 %
  - Gazakh – Red bridge - In total on distance of road of 1,1 km radiuses outside of specification R-250-450
- E-119 (M3) Alat – Astara (Iran border)
  - Salyan (129 km) - On entrance to the city of Salyan the bridge above the river Kura mismatches inquiry.
  - Bilasuvar – Astara – On road Bilasuvar – Astara the artificial constructions and bridges mismatches inquiry.
  - On 313 km of road Astara there are many radiuses outside of norm. The distance of visibility is not provided

Azerbaijan has the following road border crossing points:

- SDK (Russian Federation border)
- Red bridge (Georgia border)
- Myzymchay / Lagodekhi (Georgia border)
- Astara (Iran border)
- Bilasuvar – (Iran border)
- Aktau (Kazakhstan)
- Turkmenbashi (Turkmenistan)

With regard to the above, there is a need to build a new bridge and border crossing point infrastructure facilities that meet the modern requirements on the borders with Georgia and Russian Federation.

In addition, there is a need to build a new bridge and modern crossing point facilities on the Astarachay on the border with Iran, particularly taking into consideration of the construction of the Alat-Astara highway.

### ***National Plans, Policies and Infrastructure Investment***

With regard to the road sector, the Construction of 105 kilometres new Guba-Shamakhi highway is proposed, which will shorten the access from the central regions of the country to the Russian Federation by 156 kilometres.

In addition, Baku city Intellectual Management System will be implemented for solving the problem of increased traffic and other problems in the city of Baku. The Project will be carried during 2010-2012, not only in the capital, but also in all the Absheron peninsula.

In order to facilitate border-crossing procedures and reduce the waiting time on border-crossing points, the “Single Window” principle is also been applied since the beginning of 2009 in Azerbaijan.

### 5.3 Iran

The crucial geographical and strategic location of the country in the region, have turned it to a transit route, playing an important role in the trade between West and East. Numerous international corridors cross the territory of the Islamic Republic of Iran, connecting the Middle East and Asia to Europe; the corridors of Trans Asian Railways (TAR), North-South (three branches), China-Europe, Silk Road, TRACECA Corridor, Almaty-Bandar Abbas, Almaty- Istanbul Corridor, as well as the Turkey-Iran-Pakistan, are routes, through which the landlocked countries of Central and South Asia are connected to international waters and Europe.

The transport network of Iran consists of 24 International Road Border Terminals, 5 International Rail Border Terminals and 11 well-equipped Ports, which constitute transport links of international significance in the region. It should be noted that in 2010 the total cargo throughput through Road and Rail, were 5.7 and 1.3 million tons, respectively. Meanwhile, the Government of Iran is planning to increase the transit volume up to 20 million tons through the implementation of several infrastructure projects, which are either planned or are under construction.

Iran has a long paved road system linking most of its towns and all of its cities. In 2007, the country had 178,152 km (111,000 mi) of roads, of which 66% were paved. In addition, it comprises of 23000 km transit roads for transit trucks.

Iran has numerous international border crossing points with neighbouring countries, which include:

- Milak and Dogharoun with Afghanistan;
- Bazargan with Turkey;
- Astara (rail and road), Nourdouz and Jolfa (rail and road) border with Azerbaijan;

Furthermore, three formal border crossing points with Iraq were established:

- Khosravi on AH2 opposite to Mantharye in Iraq, which is on M40;
- Mehran in front of Zorbatye in Iraq that is connected to AH2 through Ilam and Kermanshah cities;
- Shalamcheh opposite to Basreh in Iraq (on M70), that has connection to Ahvaz and Bandar Emam on AH8 via Khorramshahr.

#### ***National Plans, Policies and Infrastructure Investment***

In the Islamic Republic of Iran, major road, railway and port development programmes are being undertaken for the expansion and modernization of the transport infrastructure. The Master Plan approved by Government of Islamic Republic of Iran on Road Transport Development Until 2021 ( RMTD) has the following objectives:

- 1) Creation of a comprehensive Road Transport Network considering the following:
  - a. Economic, safety and security issues
  - b. Effective reduction of fuel

- c. Environmental protection
  - d. Improving road safety
  - e. Maintaining balance between road transport infrastructures, road transport fleet and demand.
  - f. Improving productivity to achieve high standard on Road Transport through improving transport modes, management, human resources and information technology.
- 2) Development and Improvement of the Road Transport Network with regard to the following issues:
- a. Land use planning
  - b. Focusing on development of road axis
  - c. National interest
  - d. Transit situation of the country
  - e. Demand
  - f. Attraction of the international and national investment, attraction of people collaboration, and insurance coverage of all the above mentioned fields
  - g. Achieving greater share in international transport market

Based on the above, the following road infrastructure projects are being proposed:

- Construction of a new Astra Automobile Border Bridge
- Construction of Astra-Heyran highway ( 35 km)
- Construction of the second lane of Maku-Bazargan ByPass
- Construction of Sarakhs New Automobile Border Bridge
- Rehabilitation of Seman-Garmsar highway

## 5.4 Kazakhstan

Kazakhstan has a key geographical position, in the heart of the Euro-Asian region, and hence, one of the most important factors of economic growth in the country is the rapid development and improvement of transport infrastructure. Kazakhstan has created a competitive environment providing transportation services to accelerate the integration process of its national transport system in the international transport corridors, developing the country's transit potential.

The road network is the major element for transport and communications Kazakhstan, whose efficient operation and sustainable development is today an important factor in the transition to economic recovery, and improvement of social well being. Kazakhstan has relatively low density of railways and inland waterways. In this regard, shippers, particularly in the private sector, began to shift to road transport not only for short distances (up to 300 km), but also for longer ones (1500-2000 km). With the development of industrial and agricultural production, small-and medium-sized businesses increase inter-regional transportation, and communication with neighboring states.

The length of roads in Kazakhstan is 128.000 km, of which 97.100 km are public roads. The length of public roads are:

- roads of national importance – 23.500 km
- local roads – 73.600 km.

Despite the fact that the roads of international and national importance are 25% of public roads, they account for over 50% of road transportation. On 01.01.2011, the state of the highway network of national importance were: good - 37%, satisfactory - 42%, poor - 21%. The state of local roads were: good - 9%, satisfactory - 49%, poor - 42%.

At present and in the future, the international transportations are carried out along six main routes. Transit occurs mainly between the countries of Central Asia, Russia and China. The length of the six main routes is 8,3 thousand km, or 64% of the total length of the transit corridors.

### ***National Plans, Policies and Infrastructure Investment***

Kazakhstan adopts the Government Planning System (RK President's Decree dated 18 June 2009, No. 827), the key document, which outlines the Development Strategy of the country until 2030 ("Kazakhstan 2030"). The Strategy defines 7 long-term priorities, including infrastructure investments for transport and communication.

The Government planning document of the next level is the "RK Strategic Development Plan for 10 years" and the "Forward-looking Plan of Territorial and Spatial Development of the Country". The Strategic Plan of Development of the Republic of Kazakhstan until 2020 , currently in effect, sets the target indicators for the development of transport by 2020, identifying the infrastructure projects of significant importance. The RK Strategic

Development Plan would be adjusted based on the results of the monitoring of its implementation.

According to the Program on development of transport infrastructure in the Republic Kazakhstan during 2010 - 2014 (Government Decision of 30.09.2010, № 1006), the major investment projects in the road sector that will be implemented are the following:

- Reconstruction of the international transit corridor «Western China – Western Europe»
- Almaty – Kapchagai Highway upgrade
- Almaty – Korgas Highway upgrade
- Almaty Main Ring Road construction
- Astana – Karaganda Highway upgrade
- Beineu – Aktau Highway upgrade
- Beineu – Shalkar Highway construction
- Uralsk – Kamenka – the border of Russian Federation (Osinki crossing) Highway upgrade
- Tashkent - Shymkent Highway upgrade

***Strategic Plan of the Ministry of Transport and Communications of the Republic of Kazakhstan for 2011-2015 (dated 11 February 2011, No. 129).*** This document is developed for a 5-year period based on strategic and planning documents of the Republic of Kazakhstan, as well as the forecast of socioeconomic development. The Strategic Plan sets out strategic guidelines, goals, actions and indicative results of operations of the RK Ministry of Transport and Communications. Within the framework of the Strategic Plan, budget programs are approved, which define directions and amounts of budget expenditure, including implementation of investment projects. Project-specific investment proposals are developed and approved during development/adjustment of the Strategic Plan of the Ministry of Transport and Communications.

***Industry Program for the Development of Transport Infrastructure in Kazakhstan for 2010-2014 (dated 30 September 2010, No. 1006).*** Draft program was developed by the MTC. Plan of actions to implement the industry program contains the list of specific projects and measures, timeline for their implementation, required amount of funding and potential sources of funding.

The national/local budget for 3 years is developed annually based on strategic and program documents of the Republic of Kazakhstan, forecast of socioeconomic development and strategic plans of government authorities.

Therefore, implementation of transport projects requires that they:

- Be in line with general priorities of the industry development reflected in strategic documents;
- Be included in the Strategic Plan of MTC, i.e. investment proposals for such projects should undergo necessary approval procedures, and approval of their funding or co-funding from the state budget should be obtained.

All major legislative and regulatory frameworks for infrastructure investment are existing. In recent years, the government funded several the projects at local scale, upgrade roads and build interchanges. Concession is the basic funding model in Kazakhstan. First of all, it is being expressed by special concession legislation. First Law “On concessions in the

Republic of Kazakhstan” was adopted in December 23, 1991 and called on to regulate administrative, economic and legal environment concession agreements in Kazakhstan only for foreign investors. The frameworks have been proofed and applied in at least 4 infrastructure projects with the Development Bank of Kazakhstan and 3 concession projects supported by the Government of the Republic of Kazakhstan.

The basic legislative act handling PPP (Public Private Partnerships) aspects in Kazakhstan today is the New Law of the Republic of Kazakhstan (of 7 July, 2006) “Concerning Concessions”. Also, the main principles of activity in the concession framework are presented in more than 20 regulative acts of the Republic of Kazakhstan.

Beside the legal normative frameworks on concessions, Kazakhstan has used several other financing options to procure its infrastructure. International loans have been actively used for financing of national infrastructure projects with government guarantees. Also, infrastructure is financed by direct budgetary investments and net private investments. Additionally, mechanisms of rent, trust management of public assets, leasing are frequently used and regulated by specific laws and civil and budget legislation. A Normative Legal Act in the area of investment, in particular, starting from Civil Law, the Budget Code, Tax Code, the Law of Investment, Law on Financial Leasing, Act of Preferences from investors and others has been announced.

National sources of funding include the National Welfare Fund “Samruk-Kazyna” JSC, Development Bank of Kazakhstan and the Kazyna Capital Management JSC, while international sources of financing include the Asian Development Bank (ADB), the European Bank for Reconstruction and Development (EBRD), the World Bank, the Islamic Development Bank (IDB) and the Japan International Cooperation Agency (JICA).

## **5.5 Kyrgyzstan**

The total length of roads in the country is approximately 34,000 km, including a public road maintained by the Ministry of Transport and Communications of Kyrgyz Republic and roads of cities, villages, agricultural, industrial and other areas. The length of roads of international

importance is 4,163.0 km. The length of international corridors crossing the territory of Kyrgyz Republic is 2,242 km.

Transit traffic on the roads of Kyrgyzstan is carried out mainly between Central Asian Countries and the Russian Federation. The analysis of existing traffic of goods by road through the territory of Kyrgyzstan identified the following international transport corridors:

- Bishkek-Osh road.
- Osh - Sary Tash - Irkeshtam - border with China.
- Sary-Tash - Karamyk - border with Tajikistan.

One of the most strategically important transport artery of the country is the Bishkek-Osh road, extending for approximately 678 km and connecting north to south. The Bishkek-Osh road is also of significant importance on an international level within the context of international transport integration in the wider region. Continuation of the road to the north of Almaty will provide the connection to Kazakhstan and the Russian Federation, while its development to the south will provide links with China, the sea ports of Pakistan and Tajikistan.

Kyrgyzstan acceded to the Agreement on Asian Highway Network in 2006 (published by The Law of KG №42 from 13.02.2006 "About ratification of Intergovernmental Agreement on Asian Highway Network, signed on April, 25th, 2004 in Shanghai). The following transit roads have been identified in Kyrgyz Republic:

- Bishkek – Osh - Sary Tash - Irkeshtam - border with China - 898 km;
- Sary Tash - Karamyk - border with Tajikistan -136 km;
- Bishkek – Naryn – Torugart - border with China - 539 km;
- Kordai – Bishkek - Chaldovar - border with Kazakhstan, 110 km;
- The section of road Osh - Andijan - border with Uzbekistan - 5 km.

Being also a landlocked country, extremely high transport costs lead to sharp rises in import prices, negatively affecting the development of transit transport.

### ***National Plans, Policies and Infrastructure Investment***

One of the key targets of Kyrgyzstan is to fully realize its geographical position to become a transit bridge between Europe and Asia.

At present, the largest share of goods is transported by a road transport (95%), with a significantly smaller share by rail (3.1%). Along with general issues, specific to individual modes of transport, the main problem of the transport network of the country is to improve conditions of transportation on routes providing its international connections and transport in transcontinental communications, as the basis for integration into the global transportation system.

One of the main conditions for successful economic development of Kyrgyzstan and its inclusion in the global transportation system is:

- adaptation to international standards;
- development and improvement of international corridors passing through the territory of Kyrgyz Republic;
- creating the better conditions than those offered by alternative routes of other countries;
- decision on other trading-transport problems and active development of export, import and transit potential.

Based on the above, the construction and rehabilitation of the main international corridors crossing the territory of Kyrgyzstan, according to the priority investment projects for road infrastructure, include the following projects:

- Road of international importance E-40 Bishkek-Kordai-Almaty
- Road of international importance E-010 Bishkek-Osh
- Rehabilitation of road E-007, Osh-Sary Tash-Irkeshtam
- The project of rehabilitation of road E-60, Sarytash – Karamyk - border with Tajikistan
- Rehabilitation of road Osh-Batken-Isfana.
- Rehabilitation of road Taraz-Talas-Suusamyр

Other infrastructure projects include the construction of logistics centers in Osh and Bishkek.

One of the main conditions for successful economic development of Kyrgyzstan and its inclusion in the global transportation system is:

- adaptation to international standards;
- development and improvement of international corridors passing through the territory of Kyrgyz Republic;
- creating the better conditions than those offered by alternative routes of other countries;
- decision on other trading-transport problems and active development of export, import and transit potential.

### ***Recommendations***

For the purpose of further developing the transport sector in the country for sustainable development and economic cooperation in region, the following actions are necessary:

- Review the system of state regulation in the common areas of the country's economic reforms and improve the regulatory framework to enhance investment attractiveness and investment in the automotive industry, while ensuring the safe transport of passengers, cargoes and guaranteed quality of service.

- Initiate communication of ECO member countries with regional economic communities, international economic and financial institutions, primarily with the United Nations (UN), Islamic Development Bank (IDB), Asian Development Bank (ADB) and International Monetary Fund (IMF) for technical and financial assistance and the implementation of priority projects and programs of the region.
- Active participation in international organizations ECO (TTFA, TTKS etc.), SCO (development of a project agreement between Governments of SCO Member States on Facilitation of International Road Transport), EurAsEC (creating a single transport space), TRACECA (EU program on organization of Transport Corridor Europe-Caucasus-Asia).

## 5.6 Pakistan

Pakistan sprawls in an area of 868591 Km<sup>2</sup> sharing borders with India, Iran, Afghanistan and China. Arabian Sea falls to its south with a coastal line of 1000 odd Km. The North – South geographical layout of the country provides an excellent trade corridor establishing the shortest possible links between the landlocked country of Afghanistan, as well as China with the Arabian Sea. Added to this, Pakistan is inan ideal location accessing the central Asian Countries via Afghanistan, and Europe via Iran, becoming a bridge between Europe and the South East Asia.

Pakistan has approximately 262,000 kilometers (2010) long highway network. Around 70% of the entire network consists of paved roads. This wide network provides extensive coverage, while the mobility Index is estimated at 80% (World Bank Report). It consists of (a) National Highway & Motorway network (b) Provincial Highways & Roads and (c) Local Government and City Roads.

The National Highway Authority (NHA) is responsible for approximately 12,000 km National Highways, Motorways and Strategic Roads System. It owns the main transport corridors, which constitute inter-provincial linkages and links major towns and cities, providing also connections to neighboring countries.

The national transportation system mainly depends on north-south links. It joins Karachi, the seaport and industrial centre, to the major cities, Hyderabad, Bahawalpur, Multan, Lahore, Gujrat, Rawalpindi/ Islamabad and Peshawar in the north. There are two principal highway and rail routes, running parallel along the length of country, joining Karachi and the rest of the country; namely, National Highway N-5 to the east of the Indus River and National Highway N-55 to the west of the river. Both N-5 and N-55 connect to major east-west corridors and also act as gateways to neighboring countries. Almost 80% of the national and international socio-economic activity is concentrated along this corridor also Known as National Trade Corridor (NTC).

### **NATIONAL HIGHWAYS & MOTORWAYS**

Type	Length in Kilometers
National Highways	8,909
Motorways/ Expressways	1,678
Strategic Roads	262
Total	11,849

### **PROVINCIAL & REGIONAL HIGHWAYS/ROADS**

Provincial Highways/ Roads	101,000
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Local Government	93,823
Municipal and Cantonment	53,920
Total	248,743

The increase in length of road infrastructure since 2000 has slowed down and around 10,000 km are added to the road network. The major focus has now moved onto the improvement and modernization of existing infrastructure to national/ international standard.

### ***National Plans, Policies and Infrastructure Investment***

As a part of long term strategy, the government of Pakistan has taken up several initiatives to develop and modernize the road transport infrastructure. A number of these projects are entirely financed through government's own resources, while others are co-financed by the development partners. These are presented in the following.

#### **NATIONAL TRADE CORRIDOR INVESTMENT PROGRAM (NTCIP)**

Since 2005, a composite transport sector reform initiative supported by investments has been launched by the government to enhance the efficiency of the transport and logistics sectors. The program is known as National Trade Corridor Improvement Program (NTCIP). It aims at achieving a coherent transport and logistics system including all the transport sectors, road, rail, ports, shipping, air, freight stations, cool-chain, trade facilitation etc. to support economic growth and improve regional connectivity.

The NTC Highway Sector Improvement Program (HSIP) envisages an investment of about US\$ 4.0 to 5.0 billion aimed at upgrading capacity, extending the network, modernizing the national highways and improving the international linkages. The Asian Development Bank (ADB) under a Multi Financing Facility (MFF) will provide equivalent to US \$ 900 million for the National Trade Corridor Highway Improvement Program (NTCHISP). The implementation period is spread over 10 years (2007/08 to 2017/18). The MFF will consist of project specific loans, subject to the submission of a related Periodic Financing Request (PFR) by Pakistan. Each loan will have a repayment period of 25 years, including a grace period of 5 years. Under the tranche-1 (US \$ 510 million), the two proposed projects are the construction of new four-lane highway without limited access for Peshawar – Turkham Section-1 and access controlled Faisalabad – Khanewal motorway (M-4).

With regard to the Karachi-Hyderabad M-9 Motorway, progress on BOT mode of financing has been made.

#### **Construction of 4-Lane Karachi-Hyderabad Highway into 6-Lane Motorway (M-9)**

1.	Project Cost	Rs 24.930 Billion (US\$ 277 M)
2.	Construction Cost	Rs 18.3 Billion (US\$ 203.3 M)
3.	Concession Period	28 Years

4.	Construction Period	30 Months
5.	Operating Days	365
6.	Toll escalation Rate	10%
7.	Other Sources of Revenue	2% of Toll Revenue
8.	Debt : Equity	70:30
9.	Tax Rate	35%
10.	NHA's Revenue Share	5%
11.	Financial Close Period	6 Months
12.	Construction Activities	To commence soon after achieving Financial Close
13.	Name of Company	M/s Bina Puri Pakistan (Pvt) Ltd.

Now 1 US\$ = Rs 90

Amongst the North-South links, N-55 and Trans-Pakistan Motorway networks are being given priority. The Construction of M-4 Motorway is underway whereas phase-III upgradation of N-55 is also underway. The financing for Phase-III is being made by JBIC and ADB. The phases I & II are almost complete. The scope of work includes construction of a new two lane carriageway along the Indus Highway at an estimated cost of Rs 6 billion (\$ 100 million). The project has been designed by M/s Pacific Consultant International of Japan. This arrangement will end up in a four lane dual carriageway, which incidentally is a part of Motorway M-6. Construction work on this new carriageway has commenced and completion by 2014 is expected.

#### Motorway M-8; Ratodero-Khuzdar-Awaran-Turbat-Gwadar

The Motorway M-8 originates in Gwadar and terminates at Ratodero on N-55. It links the Gwadar port with rest of the country. The Gwadar port is more than 600 km from Karachi. The government planned 892 km long 2-lane Motorway M-8 to connect Gwadar port with the rest of the country. The work was supposed to be carried out in three packages. The cost of the entire project was estimated at Rs 18.4 billion (1US\$ at the time was Rs 59, however for consistency it is taken as 85 therefore the cost was US\$ 216.5 m)

	Road Section	Km
a.	Gwadar-Turbat-Hoshab	240 (193)
b.	Hoshab-Awaran-Khuzdar	410
c.	Khuzdar-Wangu Hills-Ratodero	242
	Total	892

Around 47 km length of Gwadar-Turbat-Hoshab section is common, and it is actually part of N-10, Mekran Coastal highway. Therefore, construction works for 193 km started in three packages and so far the overall progress on all of them is 65%.

Package	Road Section	km	Cost (Rs Mill)
I	Gwadar-Turbat	54	2494 (US\$ 29.3)

II	Gwadar-Turbat	63	3687 (US\$ 43.4)
III	Turbat-Hoshab	76	3166 (US\$ 37.3)
	Sub-Total	193	9347 (US\$ 110.0)
	Hoshab-Khuzdar		Work not Planned
	Khuzdar-Ratodero	242	6672 (US\$ 78.5)

1 US\$ = Rs 85

So far the entire amount depicted in the above table has been expended and additional resources can be estimated at US\$ 600-700 million for the whole M-8. The work on Hoshab-Khuzdar section was not planned due to shortage of funds. Instead, 454 km long N-85 was planned for up-gradation at a cost of Rs 4116 million (US\$ 48.4 million) and only 20% progress was made before the contractor demobilized due to financing issues. Since the project is located in the same area as that M-8, it suffers from the same drawbacks. The work on Khuzdar-Ratodero, 242 km long section is near in completion at a cost of Rs 6672 million (US\$ 78.5 million).

The NTC HSIP comprises of the following three core projects:

- (a) North-South Access-Controlled  
Motorway/ Expressway System:

A north-south access-controlled motorway/ expressway system to connect Karachi, Hyderabad, Bahawalpur, Multan, Lahore, Rawalpindi/ Islamabad and Peshawar will be developed to provide a high-speed, safe and reliable road transport corridor. About 370 km of the motorway system (M-1, M-2 and M-3) linking Peshawar, Rawalpindi/Islamabad, Lahore and Faisalabad is already operational. The construction of 184 km long Faisalabad – Multan motorway has started. The construction contract of 52 km long section is with a Chinese company, whereas a French company is engaged as design and supervision consultants. The government aims to complete this access-controlled expressway system with the financial assistance of various development partners. The following projects are part of the NTC program.

Number	Section	Lane	Length (km)	Cost (US\$)	Financing
E-1	Torkham-Peshawar	4	51	224	ADB <sup>1</sup>
E-2	<i>Peshawar Northern Bypass</i>	4	34	100	GOP <sup>1</sup>
M-1	Peshawar-Islamabad	6	154	Operational	

M-2	Islamabad/ Pindi B/Lahore	6	243		
M-3	Pindi Bhattian-Faisalabad	4	54		
M-4	Faisalabad-Khanewal-Multan	4	243	561	ADB/ IDB/GOP
E-5/M-5	Khanewal-Lodhran-Sukkur	4	485	925	World Bank
E-6/M-6	Sukkur-Shikarpur-Dadu	4	231	552	ADB/JBIC
M-7	Dadu-Dureji-Hub	2	270	409	World Bank
E-3	Wazirabad- Kotsarwar- Pindi Bhattian	4	100	330	World Bank <sup>2</sup>
E-4	Gujranwala-Wazirabad-Dina	4	100	156	World Bank <sup>2</sup>
<b>Total</b>			<b>1,965</b>	<b>3,257</b>	

E=Expressway M=Motorway GOP = Government of Pakistan

1. Dropped at the moment as construction of Peshawar Northern Bypass has started. \
2. The World Bank may not finance these projects at the moment; however, feasibility study for E-3 is being initiated.
3. M-8 is not included in the list as it is shown in Gwadar connectivity.

### Peshawar Northern Bypass

The construction of Peshawar Northern bypass is making good progress. The progress on 7.6 km long package-1 is 50%. The contract for package-II is to be signed shortly, whereas detailed designing of phase-III is being carried out. Furthermore, Peshawar Ring Road (southern bypass) is a provincial facility which also caters to traffic destined for Torkham.

#### (b) Gwadar Port Linkages:

The Gwadar port is located at the entrance of the Persian Gulf at approximately 160 km from the Iranian border and 460 Km west of Karachi. The phase-1 of the port was completed in 2006 and the port has become operational since December 2008. The Gwadar port has been developed as a deep sea port with the aim to accommodate large vessels (will be achieved in phase-II). The port is ready to provide transit and transshipment facilities, particularly to Afghanistan and the Landlocked Central Asian Countries.

The port is not well connected to the major trade centres and the neighboring countries. It was linked with Karachi through the Mekran Coastal Highway (N-10). However, the construction of a direct connection of the new port with the north-south expressway/motorway system (NTC) was initiated in 2006, but the progress is slow, primarily, because of financial constraints. The plan is to build two sections of M-8 motorway (Gwadar-Hoshab and Khuzdar-Ratodero) and construct N-85 from Hoshab to Sorab and a link road from Basima to Khuzdar. Thus, in addition to connecting the Gwadar

port with the NTC, it will also be connected with Afghanistan and Central Asian Republics through the National Highway N-25, which enters Afghanistan at Chaman.

Number	Section	Lanes	Length (km)	Financing
N-10	Gwadar-Liari-Gabd	2	653	Operational
M-8	Gwadar-Hoshab	2	193	
N-85	Hoshab-Basima-Sorab	2	471	Under Construction
-	Basima-Khuzdar	2	90	Government of Pak
M-8	Khuzdar-Ratodero	2	242	
			<b>1,526</b>	

(c) Upgrade of Karakoram Highway:

It is envisioned that the trade and transit traffic will significantly increase to/ from China after international road links become operational to their true potential. Therefore, Karakoram Highway (National Highway N-35), connecting Pakistan and China is being upgraded to International Standards. The following highway sections are being improved with Chinese assistance:

Number	Section	Lanes	Length (km)	Financing
N-35/E-35	Hasanabdal-Mansehra	4	97	ADB
N-35	Mansehra-Sazin	2	254	GOP/WAPDA
N-35	Sazin-Raikot	2	120	WAPDA
N-35	Raikot-Khunjrab	2	355	CHINA
				China
			<b>806</b>	

The Motorway/ Expressway System

As described in the above, the NHA plans to develop a network of full access controlled Motorways / expressways. A number of projects will, however, be taken up under different programs / funding mechanisms. The current status of motorways is presented in the table below.

### Present Status of Motorways

Name	Section	Length (km)	Number of Lanes	Status
M-1	Islamabad - Peshawar Motorway	153	6-lane	Islamabad - Burhan Section, 35 km long, was opened to traffic in September 2004. The remaining section is under construction with scheduled opening in January 2007.
M-2	Lahore - Islamabad including 32 km links & Lahore Bypass	367	6-lane	First Motorway of Pakistan, opened to traffic in 1997.
M-3	Pindi Bhattian Faisalabad	53	4-lane	Completed. Opened to traffic in 2004.
M-4	Faisalabad - Multan Motorway	284	4-lane	Included in the Public/Private Sectors Programme of NHA 5-Year programme (2005-10).
M-5	Multan - D.G. Khan Motorway	84	4-lane	Dropped
M-6	D.G.Khan - Kakkar Motorway	467	2-lane	Dropped
M-7	Kakkar - Karachi Motorway	280	2-lane	Alignment Changed, at planning stage
M-8	Gwadar - Khuzdar - Ratodero Motorway	895	2-lane	Gawadar - Turbat - Khuzdar and Shahdaskot Ratodero sections, 284 km in total length, are under construction, to be completed in 2006.
M-9	Karachi - Hyderabad Motorway (Super Highway)	136	6-lane	At present 4-lane without access control. Expansion to access controlled 6-lane motorway is considered as a future BOT project.
M-10	Karachi Northern Bypass	56	2-lane	A 24 km long section was opened to traffic in 2004. The remaining section will be completed in December 2005. Mostly undivided 2-lane. ROW is secured to upgrade to divide 4-lane.
Total		2,734		

#### National Highway Sector Development Investment Project (NHSDIP)

The further development of the East-West Link and its integration with the National Highway Network and National Trade Corridor to improve Regional Connectivity and provide better Cross Border Connectivity; a comprehensive National Highway Sector Development Investment Project was initiated in 2006 with an estimated cost of around Rs 50 billion and donor assistance of US\$ 415 Million is anticipated from the ADB. The project covers widening and improvement of about 835 Km of National Highways in three packages.

#### Construction of Turkham-Jalalabad Road

The Turkham-Jalalabad road project is one of the most important priority projects. The 73.7 km long Turkham - Jalalabad road project was taken up by the Government of Pakistan as an aid package to rehabilitate and improve the road network in Afghanistan. The project will facilitate traffic flow from Central Asian countries through Afghanistan and Pakistan. It is the busiest link between the two neighbouring countries and the shortest route between Pakistan and Central Asian countries through Kabul.

Initially, rehabilitation & improvement of existing road was envisaged in 2003 under grant assistance by Pakistan. Pakistan had earmarked an aid package to improve the road network in Afghanistan with US\$ 100 million out of total grant of US\$ 250 million.

The task was accomplished by July 2006. Later, the Government of Afghanistan, requested the construction of an additional carriageway from Turkham to Jalalabad and the works started in 2007. Around 70% work was completed by 2008; however, due to critical security situation in the area and poor financing the construction work had to be suspended. Nevertheless, the security situation has improved a bit over the last year but the financial situation is not that favourable, therefore, ECO secretariat / IDB are encouraged to not only finance the remaining part but also to initiate plans to extend the highway up to Kabul.

The above are summarized in the following table depicting the priority road infrastructure investment for the period 2010-2013.

(Amount in Rs Million)

S. NOO	PROJECT DESCRIPTION	2010-11	2011-12	2012-13	TOTAL
<b>Ongoing</b>					
	National Trade Corridor (NTC)	22,037	22,000	21,914	65,951
	NHA Core Projects	27,943	18,923	11,478	58,344
	East-West Bridges	444	15	0	459
	Southern Punjab (Multan) Package-	3,716	1,115	0	4,831
	Sindh Package	7,817	3,234	1,950	13,001
	Projects other than NHA Portfolio	559	145	0	705
	<b>Grand Total (Ongoing )</b>	<b>62,516</b>	<b>45,433</b>	<b>35,342</b>	<b>143,291</b>
<b>Planned</b>					
	National Trade Corridor (NTC)	5,876	7,844	17,184	30,904
	NHA Core Projects	4,533	7,485	16,500	28,518
	East-West Bridges	3,402	5,910	6,620	15,932
	Southern Punjab (Multan) Package	9,301	11,864	12,287	33,452
	Sindh Package	4,040	5,140	5,000	14,180
	Projects other than NHA Portfolio	1,123	2,355	2,743	6,221
	<b>Grand Total (Planned )</b>	<b>28,275</b>	<b>40,598</b>	<b>60,334</b>	<b>129,207</b>
	<b>Grand Total (Ongoing + Planned)</b>	<b>90,791</b>	<b>86,030</b>	<b>95,676</b>	<b>272,498</b>

During the next 3-5 years, depending on financial resources, most of the major programs and projects initiated for the development of an efficient highway network under the National

Trade Corridor, Motorways & Expressways Development, North-South Connectivity, National Highway Improvement Program, National Highway Development Sector Improvement Program, Gwadar Linkages, Construction of Missing Linkages, further development of East-West Links, Improvement of road network in NWFP & Balochistan and its integration with the National Highway Network, Regional Connectivity/ Cross Border Connectivity particularly transportation links with China and Central Asia & Europe through Turkey are expected to be substantially completed.

### **Recommendations**

- Development of ECO Road Network is of interest to the people in the region, intra-regional trade and tourism and transport services and consumers.
- A comprehensive ECO route node directory, identical to Asian Highway Network, detailing roadside facilities is essential. The directory shall include multimodal, freight and logistics operator of each county. Facilitate the establishment of links between the private sector operators. Create a common database and provide logistic information to the user.
- Establishing a sustainable ECO Road and Logistics fund to help improve infrastructure, cross border, transit, transshipment and storage facilities.
- Create an umbrella organization comprising national associations of international freight forwarder associations and logistic service providers throughout the ECO member countries; to safeguard, promote, co-ordinate and exchange professional expertise.
- Virtual and actual training of human resource of each sector (even virtual caravans). Organize more truck caravans through the private sector participation.
- Create affable roadside facilities for rest & recreation.
- The rest come under the Trade Facilitation, like customs etc, which is being dealt separately by the ECO. However, one suggestion is to have a mutual complimentary training at each others border posts to help understand their working.
- Eliminate Non-Physical Barriers on Main Transit-Transport Routes of the ECO region.

## **5.7 Tajikistan**

Tajikistan is a landlocked and mountainous country, bordering on Afghanistan, Uzbekistan, Kyrgyzstan and China. Due to its geographical disposition, lack of sea and river routes, inadequate development of railway network and aviation, road transport remains the main transport mode. It should be noted that more than 87% of cargo and 62% passenger-transportation are carried by road transport.

The Government of the Republic of Tajikistan signed the Intergovernmental Agreement on Asian Highways (AH), Intergovernmental Agreement on Trans Asian Railway and the Main Multilateral Agreement Europe-Caucasus-Asia (TRACECA), The Republic of Tajikistan is also a member to the UNESCAP, CAREC, SCO, UNECE, and ECO. At the same time, it maintains close cooperation with financial institutions like ADB, IDB, EBRD, World Bank,

OPEC Fund, KFAECD in order to develop transport and road sectors. It has also acceded to 5 international conventions.

In accordance with accession and membership of Tajikistan to the above agreements and organizations, the transport sector has been announced as the priority sector of the economy. Therefore, in order to integrate road and railway corridors, crossing the territory of Tajikistan, into the networks of AH, TAR, EurAsEC, TRACECA, and ECO, a number of bilateral agreements.

So far 8 international corridors are crossing the territory of Tajikistan. The routes linking Tajikistan with Afghanistan are of high importance, since they provide access to the ports of Iran and Pakistan, while access to them depends on Afghanistan. Tajikistan is linking China, the Russian Federation, the Kyrgyz Republic and Kazakhstan to the south sea ports via the Islamic Republic of Afghanistan.

The existing road network has low capacity and does not ensure safety in accordance with international standards. Today the general extent of roads amounts to 13978,7 km. The State Institution on Maintenance of Roads (GUSAD) is engaged in the maintenance of roads. There are 62 in the country. Departmental roads make up 11899,9 km, that is 47,6% of the total network. The net of roads of common use includes 5305,7 km national roads and 8673 km local roads, 62 % and 38% of the network, respectively. National roads are the main arteries and include 19 international and 94 national (access) roads.

A recent analysis of the state of roads showed that approximately 75 % of national roads have fully or partially lost their asphalt cover, and from 60 up to 80% of roads are not suitable to operate without considerable rehabilitation works. Also, at approximately 48% of roads the speed may not accede 35 km/hour.

### ***Border Crossing Points***

The following border-crossing points are operational:

- Afghanistan (1,206 km): Nihiniy Panj, Ashkasham;
- China (414 km): Kulma Pass;
- Uzbekistan (1,161 km): Tursun-zadeh, Chavast, Sughd Oblast (“Navruzobod”).

### ***National Plans, Policies and Infrastructure Investment***

The Head of the State and the Government of the Republic of Tajikistan consider the issue of finding the way out from the transport and communication deadlock as the top priority for the country within the framework of the concept of revitalizing the Silk Road. The strategy defined two key directions for the activities in this sector:

1. Linking domestic roads with international highways and establishing transit transport infrastructure;
2. Accession to international conventions and agreements on transport.

One of the main aspects of the above is the reconstruction and rehabilitation of roads of national and international significance, linking Tajikistan country with its neighboring and beyond. The Programme for Social-Economic Development of the country adopted by the Government of the Republic of Tajikistan defines the necessity of rehabilitation and maintenance of the main road transport network by 2015.

Within this framework of realization of the national strategy and objectives of the Government of Tajikistan, a number road transport infrastructure projects has been completed, including the construction of Kulyab-Horog-Kulma-Karokorum (Shagon-Zigar, Shkev-Zigar), Dushanbe-Kurgantube-Kulyab, Dusti-Nizhniy Pyanj, tunnels Istiqlol and Ozodi are open, the roads Dushanbe-Chanak-, Vahdat-Jitgital-Sarytash (border of Kyrgyzstan), Kurgantube-Dusti and Shahrstan tunnel are at the final stage.

The National Target Program for Development of the Transport Complex up to 2025 has been adopted on 1 April 2011 and approved by the Decree of the Government No. 165.

A short-term goal is the rehabilitation of the international road Vahdat-Dangara, including construction of Chormakzak tunnel, prioritized for investment, due to the construction of the Rogun dam, which will enable the completion of 75 km of the replacing link between Obi Garm and Nurabad of Dushanbe-Karamyk (border of Kyrgyzstan), and also the realization projects on Dushanbe-Kulyb-Kalay and Dushanbe-Tursunzade. In addition, it is envisaged to rehabilitate 166 bridges for the total sum of 8 mln.USD.

For the mid-term period (2014-2019) it is envisaged to attract investments for reconstruction and restoration of roads of international importance with the total length of 734 km for the total sum of 161 mln.USD. It is also envisaged to rehabilitate medium sized and big bridges for the total sum of 6,5 mln.USD. During this period, maintenance of international and national roads is also planned.

During 2015-2017, the construction of the south bypass road in Dushanbe, is planned, with length 16,5 km for the sum of 26,4 mln.USD, where as during 2018-2019 the bypass road in Hujand will be constructed at a cost of 16,4 mln.

The Isfara- border with Kyrgyzstan (IR 15), and Isfara – border with Uzbekistan (IR 17) others are considered as important international border crossing points. Expenditures for these new projects are estimated for the sum of 238 mln.USD Expected economic benefit from investments totals 17,9 %.

At a long-term period, more funding is expected to be received from the Government for realization of rehabilitation programmes. Nevertheless, preferential crediting will remain the main source of financing. During the long term period bridges will be rehabilitated for the sum of 5,5 mln.USD. Also during this period, 274,2 mln.USD is envisaged to be allocated to maintaining international and national roads – around 192 mln.USD and local roads - 82,26 mln.USD. At the same time, the construction of wayside infrastructure (filling station, station of technical servicing, stores, campings and hotels) facilitating transport services is envisaged.

### **Recommendations-Measures on improvement a maintenance of roads under the support of multilateral institutions**

- Revision of existing methodology of allocating the national budget and financing sources to operate the roads. (Establishment of a special fund for road maintenance).
- Development of financing strategy to operate the roads with participation of the private sector.
- The cost of maintenance and operating of roads should be covered at the expense of road users.
- While drafting contracts and credit agreements on the projects related to rehabilitation works, it is recommended to provide regulations regarding purchase of road construction facilities and transmit them to the relevant authorities for road maintenance. In this case, the lender guarantees subsequent measures for road maintenance to be rehabilitated according to the project.
- Consider possibility of promoting attraction of the private sector through private investments to the national authorities on road maintenance, where ECO may play a role of “catalyst”.
- Study the experience on financing of road maintenance on the example of a separate country at the expense of users, mechanism of such financing, exploitation of toll roads, and appropriate legislation.

## 5.8 Turkey

The Republic of Turkey with a total area of 814,578 km<sup>2</sup> and 8,333 km of coastal line lies in the main traffic artery between Asia and Europe, having borders with Bulgaria, Greece, Iran, Iraq, Syria, Georgia, Armenia, and Azerbaijan. Turkey is surrounded by the Black Sea on the north and the Mediterranean Sea on the south; it connects the Balkans to the Middle East, Central Asia to the Caucasus and the Black Sea countries with the Mediterranean countries. Turkey's location elevates its transport policies and investments to a prime ranking relative to other policies of the Turkish Republic.

Turkey will adopt the role of being an interconnection between Europe, the countries of the Middle East, the Caucasus region, the littoral countries of the Mediterranean, the Aegean and the Black Seas. The transport infrastructure networks in this region are, therefore, vital to competitiveness, economic growth and employment in Turkey and the entire region. Turkey's unique geographic location offers tremendous multi-modal transport opportunities. To make maximum use of these opportunities priority should be given to:

- Improving transport in the North-South and East-West axes to better integrate Turkish transport with international transport networks;
- Improving intermodal transport facilities and services, to take advantage of the strong growth in container transport; and,
- Improving maritime connections and nodal points (seaports), to take advantage of their potential strategic role as industrial and logistic platforms.

The road transport sector in Turkey is by far the most important inland transport mode with a market share of 96% in passenger transport and 92% in goods transport. There is a large and active international fleet in Turkey and access to the road transport industry has been greatly liberalized. The private sector is also involved, and, hence, the market is free and open to competition.

The density of the Turkish road network, excluding urban roads, is approximately 47 km/100 km<sup>2</sup>. The approximate length of the international road network is approximately 9000 km. 8878 km of the main road network consists of E-Roads, which connect the east and the west through the Anatolian mainland and have high standards. The E80 and E90 are the two main roads linking Turkey with European borders, as well as Iranian and Iraqi borders.

Turkey's road transport policy is consistent with EU policy.

The border gates of Turkey, serving the connection to other ECO countries are the West and East border gates. The main road border gates in the West are Kpikule and Hamzabeyli with Bulgaria, and Ipsala with Greece. The main road border gates in the East are Gurbulak, Esendere and Dilucu with Iran, and Sarp and Turkgozu with Georgia.

Since 2000 reconstruction and modernization operations were carried out at the land border gates in Turkey so as to facilitate and accelerate traffic flow at the border crossings, to facilitate customs procedures, to increase service quality and to decrease waiting times at borders.

## ***National Plans, Policies and Infrastructure Investment***

The transport sector in Turkey faces several problems, the most prominent being the failure, in the past, to develop a coherent intermodal transport network. The low ratio of investment in railways and port infrastructure and the lack of a sound strategic development framework led to an unequal growth in different modes of transport. The time and cost efficient transportation services provided by the road sector surpassed any other single mode of transport and became the dominator of the domestic transport market for both passengers and freight. The road transport sector provides an uninterrupted and fast, door-to-door transport of passenger and freight services with a modern fleet. Therefore, improvement of transport infrastructure is one of the major factors for Turkey striving to increase its competitiveness in rail sector to the international standards.

Current Turkish transport policy, as articulated in such major policy documents as the Development Plans (Eighth and Ninth DP) and related Medium Term Programme and Annual Investment Plans, Transport Master Plan Strategy, Strategic Coherence Framework and in studies like TINA Turkey, now focuses on alleviating the imbalance among the modes of transport by putting emphasis on railway and port investments. Establishment of a balanced, rational and efficient transportation infrastructure ensuring the effective use of the transportation modes is the main theme of transport policy of Turkey. To this end, emphasis is placed on the adoption of an integrated approach for the transportation system, with attendant implementation, designed to ensure both an increasing share for railway transport of passenger and freight and the transformation of major ports into freight centres. Priority is also assigned to safety in all transportation modes.

Turkey has a very high number of on-going and planned projects on road infrastructure. The majority of these projects are financed through national funds. In the meantime, the PPP model is implemented on road infrastructure projects successfully. To this end, with regard to the road infrastructure, the targets for year 2023 are the following:

- Total length of divided roads will be increased to 36500 km (from 19702km currently).
- Total length of highways will be increased to 7500 km with the additional motorway projects of 5200 to be realized by built-operate-transfer model (BOT).
- All road network reaching 70000km will be transformed to bituminous hot mixture asphalt.
- Construction of motorway will be realized by built-operate-transfer model (BOT) in relation with increasing traffic congestion and participation of private sector in new infrastructure projects will be ensured.
- All seaports and industrial roads will be linked with divided roads.
- Roads of all city centres including international transport corridors will consist of divided roads with bituminous hot mixture asphalt.

## **6. CONCLUSIONS AND RECOMMENDATIONS**

## 6.1 Results Achieved

The present study, “**ECO Road Network Development Plan**”, as part of the ““ECO Priority Road and Rail Routes and Infrastructure Projects” Study, prepared by the Consultant, achieved the following tangible results:

- Completed an extensive data collection process on transport road routes and related infrastructure projects, involving the input of National Experts from 8 ECO Member States, namely Afghanistan, Azerbaijan, Iran, Kazakhstan, Kyrgyzstan, Pakistan, Tajikistan and Turkey.
- Identified 7 Priority Road Routes in the ECO region with related branches and extensions.
- Developed a database from extensive data collection, listing the road infrastructure projects per country, together with key information regarding their location with regard to the identified routes, current status, start and end dates, cost and sources of financing, etc.
- Developed the ECO Road Transport Network Development Investment Plan and Time Plan by prioritizing 47 investment projects of total cost of approximately \$21.29 billion, along a total length of approximately 11,453 km of road network.
- Drafted Country Reports for each participating country detailing current conditions on road transport infrastructure, as well as National Transport Plans.

The ECO Priority Road Routes identified by the study could form the basis for the development of an interregional backbone road network with extensions to neighbouring countries and regions. They constitute a promising prospect for transportation in the ECO region and neighbouring countries, primarily taking into account the vast transit traffic capacity potential of land routes through northern Eurasia, which at present are very much under-utilised. Hence, the development of these proposed ECO Road Routes would provide additional Euro-Asian transport solutions to the existing maritime and at the same time become a development tool for many countries in the ECO region, particularly the landlocked ones.

It is acknowledged that the implementation of the proposed ECO Road Network is a long-term process that requires first and foremost all political will and commitment from all the countries involved. To see it to fruition will also require continuous close cooperation amongst the ECO Member Countries, between them and their immediate neighbouring countries, their respective National Experts and the ECO Secretariat.

To this end, a number of actions could be recommended with regards to data collection, monitoring, GIS Mapping update/maintenance, continuous revision/update of the Investment Plan and funding securisation, as well as certain technical and institutional actions.

The provision of transport infrastructure is a necessary, but not sufficient condition for the movement of international trade and the efficient operation of the ECO Priority Road Routes, since obstacles and bottlenecks occur, particularly at borders, due to the lack of policy and administrative interoperability and harmonisation. It is vital that transport facilitation be

addressed in an integrated manner by all the authorities concerned and in direct partnership with the private sector.

## **6.2 Recommendations**

Based on the above, the study culminates in a set of recommendations, classified into three areas, namely, infrastructure and services, facilitation, and policy, which address the current impediments to seamless transit traffic, with the scope to set the basis for the development of strategic action plans at national, bi-lateral and international (ECO) level.

### ***Infrastructure and services***

#### Adoption of identified ECO Priority Road Routes

Considering the fact that the countries that participated in the present study through their National Experts have contributed to the identification of the priority ECO Road Routes, it is of the outmost importance that they agree on the selected road routes and continue to support their realisation, concentrating their efforts in integrating their national transport networks with the priority identified routes.

#### National Master Plans

The development and endorsement of the ECO Priority Road Routes and road projects identified by the present study should be based on national Master Plans and funding possibilities, elaborated by the ECO participating governments, while taking into account the existing sub-regional, regional and interregional agreements on road infrastructure.

#### Funding Securitization

An important factor in the realization of the ECO Road Network identified is the securitization of funds to be used for the implementation of the proposed infrastructure projects. To this end, finalisation of the funding situation of the network regarding unfunded projects and examination of possible sources of funding is required. In addition, the eligibility criteria for the respective countries to receive funds, as well as analysis of the required procedures should be indentified. Funding sources to be examined are (non-exhaustive list):

- National financing.
- Banks, such as the Asian Development Bank (ADB), Islamic Development Bank (IDB) and the World Bank. In addition, any national development banks should be identified that could potentially finance the realisation of infrastructure.
- The EU Development Assistance programme, the Central Asia Regional Economic Cooperation (CAREC), Organization of the Black Sea Economic Cooperation (BSEC).
- Private sector participation: alternative funding schemes, such as Public-Private Partnership (PPP) schemes (i.e. BOT) for infrastructure delivery and operation, as well as PFIs for services/operations delivery.
- Cross-border financing.

#### Data Collection and Monitoring

The main difficulty when presenting the complete shape of the proposed ECO Priority Road Network and related development plan was the lack of adequate information on technical,

traffic/transport, economic/financial data and funding issues. In order to provide an accurate and realistic information on the actual level of the investment expenditure required to complete the ECO Road network, the countries with incomplete data and those that did not submit any information are encouraged to timely provide this information so that the evaluation exercise can be completed. In addition, monitoring of the ECO Priority Road Routes performance and projects' implementation is required through transparent measures aimed at:

- Observing, measuring, recording, collating, processing information for necessary decision/action.
- Providing information on the state of play of programme/project in direct comparison to original plan and costs.
- Identifying constraints to implementation and suggesting solutions.
- Securing the involvement of stakeholders
- Enhancing efficient management of resources, accountability, transparency

Based on the above, it is recommended that National Experts participating countries submit data on a continuous basis to the ECO Secretariat.

#### Synergies and concerted actions

Synergies and coordinated actions should be explored amongst countries in terms of infrastructure implementation, as well as coordinating implementation time periods in particular, in order to ensure consistency, infrastructure continuity, interoperability, seamless transport and reduce potential risks of marginalization of hinterlands and landlocked countries.

#### Operation and Services

Apart from the provision of infrastructure, the operation of the identified ECO Priority Road Routes and related provision of transport services is of equal importance for the creation of an efficient and seamless road network. To this end, it is recommended to perform corridor specific operational profiles for the identified ECO Road Routes, which could identify the impediments to transit traffic and set the ground for developing action plans. Routes studies should indicatively explore, amongst others, the following:

- Operational and technical characteristics along routes (total weight, length of trucks, gradient, speed, all-weather roads, etc.)
- Travel time
- Prices/travel cost
- Frequency of services
- Supply chain and logistic services
- Terminals/Transshipment centres capacity, charges and services

#### ***Facilitation***

It is vital that transport facilitation be addressed in an integrated manner by all the authorities concerned and in direct partnership with the private sector with a considerable emphasis on technical and administrative harmonisation. More specifically, the following recommendations are provided with regard to facilitation:

- Accession to international conventions and agreements
- Harmonization of rules and regulations
- Synchronising Customs Procedures
- Visa formalities
- Ensuring interoperable systems
- Build Human and Institutional Capacity
- Trade facilitation

### ***Policies***

In order to achieve the goal of successfully building and operating an efficient and sustainable ECO Road Network, the infrastructure and facilitation measures mentioned in the above need to be embedded in a sound policy framework. Therefore, a number of policy recommendations for the both the ECO participating countries, as well as the international organizations concerned are provided:

1. The ECO Study project results of both infrastructure and facilitation measures should be brought to the attention of the appropriate bodies in the ECO Secretariat for consideration of potential follow-up actions in the framework of their regular legislative and normative work.
2. The establishment of a suitable mechanism ensuring efficient coordination and monitoring of activities related to the proposed ECO priority network should be considered.
3. Due to the strong commonalities between various network infrastructures, what should be considered “best practices” on developing road transport infrastructure and facilitation of international transport in Asia from national governments and international organizations should be assembled and disseminated. To this end, it is proposed to identify areas and promote concerted actions with other related parties, such as UNESCAP, OSCE, BSEC, Islamic Development Bank, Asian Development Bank, World Bank, EBRD, EurAsec, CAREC, European Commission, SCO, with regard to regional integration transport activities and road projects implemented by international regional and sub-regional organizations and concerned bodies. The feasibility for road and intermodal transport network agreements should also be examined, subject to available funding.

In addition, and subject to available funding, cooperation should be promoted in support of related ongoing or new initiatives and projects:

- UNECE-UNESCAP Euro-Asian Linkages Project
  - TEM and EU TEN-T with regard to transport corridor and networks
4. It is recommended to build an ECO Observatory to serve as an information centre for intermodal transport infrastructure investments and operations along the identified corridors, and provide a forum for the exchange of views among all interested stakeholders, related bodies and participating countries. The operating modalities of the observatory could be decided jointly by the ECO Secretariat and National Experts of participating countries. This would allow the best exploitation of the study's results and outputs.
  5. Promote the dissemination and awareness of the "ECO Road Development Plan Study" by commencing an official dialogue with other international bodies (UN, European Commission, BSEC, etc) and International Financing Institutions (Islamic Development Bank, Asian Development Bank, World Bank, EBRD) endorsing the work and for information exchange.
  6. With regard to the alleviation of non-physical bottlenecks, the following are recommended:
    - Government and border control agencies need to eliminate the mismatch between public and private companies interests and formally create partnerships to develop measures agreed by both parties.
    - Government and border control agencies need to develop policies, which link the modernization of road transport and border crossing point hard infrastructure with the development and implementation of international good practice procedures in terms of harmonisation and interoperability.