

ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC

**LAND TRANSPORT LINKAGES FROM CENTRAL
ASIA TO SEA PORTS IN THE SOUTH
AND THE EAST**



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CONTENTS

1.	INTRODUCTION	1
2.	CENTRAL ASIAN REPUBLICS AND THEIR NEW TRANSPORT DEMANDS ..	3
3.	LAND TRANSPORT ROUTES FROM CENTRAL ASIA TO SEA PORTS OF THE ISLAMIC REPUBLIC OF IRAN AND PAKISTAN IN THE SOUTH AND CHINA IN THE EAST	9
3.1	Routes development scenarios	9
	Scenario 1 Existing rail and road routes	9
	Scenario 2 (1996-1997 period)	23
	Scenario 3 (year 2000 and beyond)	30
	Operational aspects of railway options	37
	3.5.1 Traffic forecast	38
	3.5.2 Rail, rail-cum-road routes	42
	3.5.3 Transportation of containers	43
4.	COMPARISON OF LAND TRANSPORT ROUTES TO SEA PORTS IN THE SOUTH AND THE EAST	47
4.1	Routes to sea ports in Islamic Republic of Iran and Pakistan	47
	Railway routes to sea ports in Islamic Republic of Iran, Pakistan or China ...	52
	General remarks	57
5.	LAND TRANSPORT BORDER-CROSSING FACILITATION	60
	Traffic facilitation in ECO Region	60
	Problem areas and land transport facilitation needs of Central Asian Republics	66
	Container traffic facilitation	74
	Measures to improve border-crossing transport	77
	ECO transit treaty	83
6.	MAJOR CONCLUSIONS AND RECOMMENDATIONS	86

7. ANNEXES 92

7.1 List of countries and organizations visited 93

 Railways and roads technical standards and data 98

 Land transport overview by countries 112

7.4 Container terminals in Central Asia 129

7.5 Road and rail border-crossings between Central Asian Republics
and Afghanistan, Islamic Republic of Iran and China 136

7.6 Bilateral and multilateral transit and transport agreements signed between
Central Asian Republics and neighbouring countries 137

References 140

LIST OF FIGURES

3.1	Potential corridors from Central Asia to sea ports in the South and East	8
3.2	Scenario 1: Land transport routes to sea ports in the South	10
3.3	Scenario 1: Land transport routes to sea ports in the East (China)	11
3.4	Scenario 1: Railway route from Central Asia to sea ports in China	13
3.5	Scenario 1: Existing road routes from CAR to sea ports in Islamic Republic of Iran	15
3.6	Scenario 1: Existing road routes from CAR to Karachi port	16
3.7	Almaty - Istanbul Highway	21
3.8	Scenario 2 (1996-1997)	24
3.9	Roads and proposed railways in Afghanistan	31
	Road connections: Almaty - Karachi - Calcutta	34
	Scenario 3: (year 2000 and beyond) Railway connections	36

LIST OF TABLES

3.1	Technical data of the Almaty - Istanbul Highway	22
3.2	Plan for the improvement of the railway line in Kazakhstan, Uzbekistan and Turkmenistan	28
3.3	Central Asian Republics access to sea ports - South (road transport)	55
3.4	Central Asian Republics access to sea ports (railway transport)	56
5.1	Road border points among ECO countries	62
	Accession to International Conventions	78
	Accession to International Transit Conventions	79
	Bilateral agreements on road and rail traffic regulations	80

1. INTRODUCTION

While trade with the rest of the world retained its importance, a salient feature of the ESCAP region's trade growth in recent years had been the steadily growing significance of intraregional trade, indicating a need to improve and expand transport and communications links within the region as well as with other regions. Travels in the region (for both tourism and business purposes) followed similar trend. The development and strengthening of intraregional and interregional transport and communications linkages constitute therefore a major objective of Phase II (1992-1996) of the Transport and Communications Decade for Asia and the Pacific.

To achieve this objective in the field of land transport in Asia, the Commission at its 48th session in 1992 endorsed an integrated project "Asian Land Transport Infrastructure Development" (ALTID) comprising the Asian Highway, the Trans-Asian Railway projects and facilitation of land transport. This project was accorded priority for Phase II of the Decade.

It became evident however, that because of the scope of ALTID project, the varied status of land transport network development in the countries and subregions concerned, and the limited availability of resources, the implementation of the project would require a special approach and strategy.

The implementation strategy for ALTID project was therefore adopted by the Commission at its 50th session (1994) focusing on maximizing the utilization of existing land transport infrastructure, establishing efficient cooperative arrangements at the subregional level, and optimizing the utilization of the limited resources available. The strategy comprises the following elements:

- (a) Facilitation of land transport at border-crossing through the promotion of the relevant international conventions and agreements in Asia, as an important basis for the development of international trade and tourism;
- (b) A step-by-step approach, through studies of corridors and other aspects of land transport development, to assist in the formulation the rail and road network and to establish minimum route (road and rail) standards and requirements as reflected in the approved ALTID Action Plan for 1994-1995;
- (c) Cooperation with other international organizations, to avoid the duplication of work and to ensure the eventual compatibility of road and rail route standards and requirements; and
- (d) Major emphasis put on the implementation at the subregional level.

Since Economic Cooperation Organization (ECO) represents a major regional grouping and includes Central Asian Republics (CAR) which are also members (as of 1992) of ESCAP and keeping in view that the land-locked CAR with their major land transport routes developed mainly to the North have an increasing need to gain access to the sea ports in the South (Islamic Republic of Iran, Pakistan) and the East (China) to develop closer relations with all the neighbouring and other countries and to also rapidly develop international trade and tourism, ESCAP has carried out in 1994 this study on land transport linkages of Kazakhstan, Turkmenistan, Uzbekistan with sea ports of the Islamic Republic of Iran and Pakistan in the South and those of China in the East.

The major objective of the study, funded generously by the Government of Netherlands, was to assist CAR in identifying main present and future land transport routes from Central Asia to sea ports of the Islamic Republic of Iran and Pakistan as well as of China. The identification of problems in land transport facilitation as well as of the measures to improve it constitutes another important part of the study. The study has been carried out in close cooperation with ECO secretariat and with the active participation of the countries concerned. However, due to limited funds available, only three CAR, namely Kazakhstan, Turkmenistan and Uzbekistan were covered by the study. Nevertheless, the results of the study, are expected to be useful to Kyrgyzstan, Tajikistan, whose national land transport systems are directly linked with the international corridors identified in the study. Missions were also undertaken to China, Islamic Republic of Iran and Pakistan.

In spite of excellent cooperation rendered by all the participating countries it was not possible to obtain all the required data and information, particularly those relating to traffic forecast, cost of transport etc. mostly due to a fact that international trade between Asian Republics and other countries is at its initial development stage. Under the circumstances, the project team's own estimates and judgement were in some cases the only possible way to proceed with the study.

The study report consists of five chapters, namely: Introduction; Central Asian Republics and their new transport demands; Land transport routes from Central Asia to sea ports of the Islamic Republic of Iran and Pakistan, and those in China in the East; Comparison of the land transport routes to the sea ports in the South and the East; Land transport border-crossing facilitation; Major conclusions and recommendations.

Annexes attached to the report include: list of countries and organizations visited; railway and road technical standards and data; land transport overview by countries; container terminals in Central Asia; road and rail border-crossings between CAR and Afghanistan, Islamic Republic of Iran and China; list of transit and transport agreements; list of references.

It is hoped that results of the study would provide useful guidelines for all the countries' authorities concerned in the development of efficient and reliable land transport routes from land-locked Central Asian Republics to the sea ports in the South and the East.

2. CENTRAL ASIAN REPUBLICS AND THEIR NEW TRANSPORT DEMANDS

The Central Asia subregion, which comprises all CAR: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan is flanked by the Russian Federation in the North, China and Mongolia in the East, and Islamic Republic of Iran and Pakistan in the South. The whole subregion is land-locked, thus making all CA countries land (and/or air) transport dependent. The Caspian Sea at the subregion's western boundaries provides some water transport connections leading to Ukraine and further to Europe (possibly to the countries of the Mediterranean basin), and to the Russian Federation and the Baltic Republics in the North.

The existing land transport infrastructure within the Central Asia subregion is relatively well developed. Road and rail connections link all capitals and economically important areas, thus there are no major linkage problems. Crossing the borders by transports, particularly between the Commonwealth of Independent States (CIS) member countries reportedly presents no serious difficulty as there are appropriate agreements in place.

However, in terms of international transport needs, the transport infrastructure in the Central Asia Subregion has certain limitations. Firstly, its outlets have been developed (due to a prevailing orientation in the past) mostly to the North, and secondly roads as well as railways (despite servicing well the domestic transport needs) are to meet the new requirements which land transport is facing nowadays in connection with the new political and economical orientation of the all CAR manifested in their opening to the rest of the world.

This opening finds in turn its reflection in the tendency to rapidly establish the closest possible economic relations, first of all with the neighbouring countries.

There are also two decisive factors that condition and at the same time stimulate the development of the above new relations, in which land transport play a major role.

Those factors are as follows: a) all CAR need an overland access to the sea ports, and b) they themselves are located on the crossroads of the east - west (Far East to Europe) and south - north (Indian Ocean and the Persian Gulf basins to northern Russia and the Baltics, also with branches to Europe) land routes.

Since the fast developing countries of the ESCAP region (China, Islamic Republic of Iran, Pakistan) are concerned both in the promotion of their trade with CAR as well as in transiting their goods via CAR to the Russian Federation, Ukraine, the Baltics, and Western Europe it becomes evident that CAR in general, and those of them which have an advantage of having major land transport routes on their territories in particular, are slowly emerging as key players on the land transportation scene in the mainland Asia region.

A good example could be Turkmenistan (one of the world's most remote countries with a closest seaport of Bandar Abbas in the Islamic Republic of Iran around 2,000 km away) which sees itself as a potentially important transport corridor for European and Russian eastbound freight to South and South-east Asia and focuses inter alia on serving an economically-competitive land transport corridor, or even entrepot for international trade.

The above would perhaps appear more clear when one compares for example the distances (via Trans-Siberian and Euro-Asian Railways) between some selected Far Eastern Asia trade origins and its destinations in central Europe, which are shown in the following table.

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From	To	London			Rostock		
		By sea	By rail		By sea	By rail	
			Tran-Siberian	Euro-Asian		Tran-Siberian	Euro-Asian
China port:	- Tianjin	20,900	11,100	11,600	22,500	9,900	10,400
	- Lianyungang	20,200	11,900	11,400	21,800	10,700	10,200
	- Shanghai	19,600	12,300	11,800	21,200	11,100	10,600
Japan		21,200	14,500	13,900	22,800	13,300	12,700
Hong Kong		18,100	-	12,400	19,700	-	11,200

It is clear from the table that there is a considerable saving in distance on railway routes over sea routes. There are also different distances depending on what railways "corridor" is to be used. At present e.g. the distance from Chinese ports to Istanbul by northern (Trans-Siberian (TSR)) route is about 14,000 km. Once the Central Asian Railway route is completed (there is a missing link between Islamic Republic of Iran and Turkmenistan which is under construction), the distance to cover would be around 9,500 km, which means around 4,500 km saving in favour of the Central Asian Railway route.

The following table shows also the savings in transit times for land (TSR) and sea transports.

LANDBRIDGE: INDICATIVE TRANSIT TIMES			
Landbridge	Days	Conference Line*	Days
Japan-Nakhodka	3.5	Japan-Rotterdam	26
Consolidation and handling	7.5	Port/road loading	1.0
Rail transit	13.0	Road delivery	1.0
TOTAL TRANSIT:	24	TOTAL TRANSIT:	28.0
* For a non-conference carrier the sea-transit time could increase to 35 days. Source: Booz, Allen and Hamilton, Travers Morgan, 1992; Sealand.			

The advantage of developing new railway routes is becoming even more evident in the light of the present and forecasted volumes of a railway container traffic between Europe and Far Eastern Asia as illustrated by a table below.

Container traffic Europe-Far Eastern Asia

Year	To Asia	From Asia	Total
1991	1,028	1,391	2,419
1996	1,327	1,990	3,317
2000 ⁽¹⁾	2,810 ⁽¹⁾	3,408 ⁽¹⁾	6,218 ⁽¹⁾

(Thousand TEUs)

(1) Includes empties

Since in the majority of cases the transportation of cargo takes place along routes stretched over thousands of kilometres, it is also evident that railway transport using containers (at present mostly 20' units and later changing to 40' units) is the most promising as well as economical and safe means of cargo transport between CAR and to neighbouring countries, and of transit transport from/to other countries in and outside the region.

Road transport in general, despite the fact that at present considerable volumes of cargo are moved by it due to its door-to-door convenience as well as due to temporary deficiencies of the railway transport infrastructure and operations (due to *inter alia* different gauges used), will in the future play apparently relatively complimentary role as compared to railway transport in view of distances involved.

While there are already overall positive indications and efforts made by countries to establish continued and efficient railway services which would definitely make the railways transport more competitive, the modal split has yet to be more precisely estimated or determined and considered.

It is also worth to mention that there are already a number of options for developing cross-continent (East-West and South-North) rail and road transport routes (corridors) via CIS and/or ECO subregions.

The Central Asian Republics of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan are members of CIS as well as of ECO and ESCAP.

ECO, while being a relatively new organization in the present shape which include all CAR, has also proven that they are extremely well aware of the subregions's changed political and economic situation, as well as of the new emerging needs and targets, particularly in the transport sector.

This has clearly found its reflection in the ECO "Outline Plan for the Development of Transport in the ECO Region" adopted by the Meeting of Transport Ministers of the ECO Member Countries held in Almaty in October 1993.

It, first of all, clarifies the objectives keeping in mind the Quetta Plan of Action and the Long-Term Perspectives of the Istanbul Declaration and also sets up the target deadlines for completion of the particular activities.

The objectives, which apply in general to the all transport modes, are as follows:

1. Enable trucks to travel from one end of the region to the other in accordance with internationally accepted standards and by routes prescribed by Member States.
2. Expand and integrate national railway networks to permit transportation by rail from one end of the region to the other.
3. Expand air connections so as to provide air connection between the capitals and major cities of each of the ECO countries at least once a week.
4. Expand port facilities to handle the sea-borne trade of the region.
5. Conclude bilateral or multilateral agreements within or beyond the region that may be necessary to facilitate such transport including access through new border and custom posts that may be established.

Other related plans include the development of the second Euro-Asian landbridge with railway container routes from the Chinese sea ports to Europe as well as plans for the "silk railway" (China-Almaty (Kazakhstan)-Meshad (Islamic Republic of Iran), which would cut the travel distance by rail by some 4,500 km.

Having said the above it also becomes obvious why ESCAP, being aware of the emerging situation and new needs, has adopted in 1992 the ALTID project and the Resolution 48/11 on "Road and Rail Transport Modes in Relation to Facilitation Measures" which is intended to assist the ESCAP member countries, among them CAR, in the improvement of their international land transport infrastructure and land transport facilitation which is being considered at least equally important for the promotion of international trade as is the improvement or development of physical infrastructure and procurement of trucks and railway wagons or containers.

The above mentioned objectives have also served as guidelines to ESCAP while proceeding with the whole study.

As a result of desk studies and from information obtained (prior to fact-finding and data-collecting missions undertaken by ESCAP) from the countries covered by the study, it became clear that the coastal countries (China, Islamic Republic of Iran, Pakistan) being aware of the situation have already nominated their major sea ports to service the transport needs of CAR as follows:

South:

Islamic Republic of Iran: ports of Bandar Abbas and Chah Bahar

The Ports and Shipping Organization of the Islamic Republic of Iran has allocated the port of Imam Khomeini as well as Shahid Rajaei Port Complex-Bandar Abbas, both in the South and Ports of Amirabad, Nowshasar and Anzali in the North for transit of goods to the newly independent countries such as the CAR.

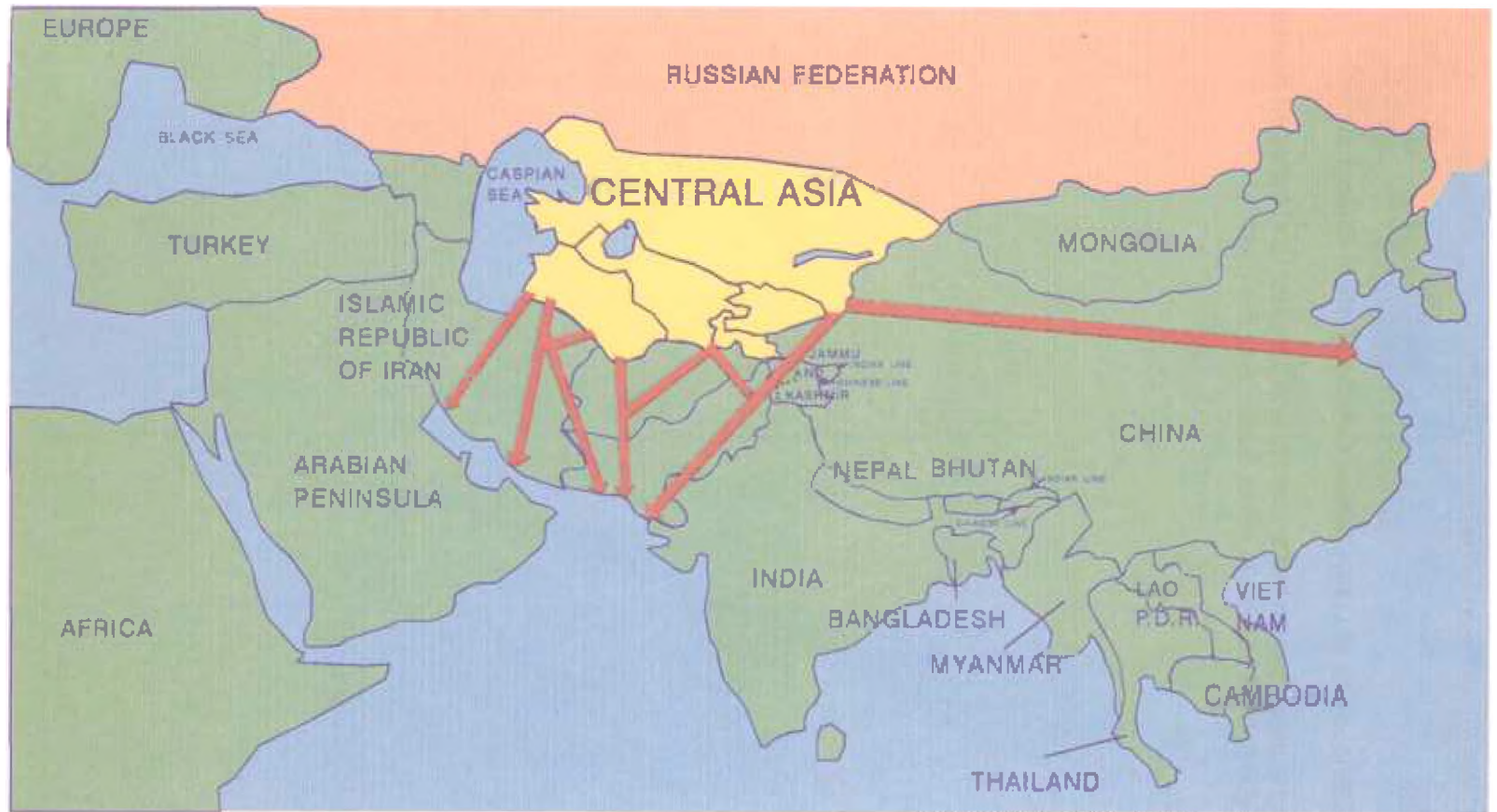
Pakistan: ports of Karachi and Qasim

East:

China: ports of Lianyungang, Qindao, Tianjin, Shanghai

There is therefore a need to identify and consider land transport routes from Central Asia to the above indicated sea ports in the South and the East.

FIGURE 3.1. POTENTIAL CORRIDORS FROM CENTRAL ASIA TO SEA PORTS IN THE SOUTH AND EAST



DOTTED LINE REPRESENTS APPROXIMATELY THE LINE OF CONTROL IN JAMMU AND KASHMIR AGREED UPON BY INDIA AND PAKISTAN. THE FINAL STATUS OF JAMMU AND KASHMIR HAS NOT YET BEEN AGREED UPON BY THE PARTIES.

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3. LAND TRANSPORT ROUTES FROM CENTRAL ASIA TO SEA PORTS OF THE ISLAMIC REPUBLIC OF IRAN AND PAKISTAN IN THE SOUTH AND CHINA IN THE EAST

3.1 Routes Development Scenarios

Figure 3.1 shows potential land transport corridors from Central Asia to sea ports in the South and East.

A scenario approach has been applied in the course of the study, that is to attempt to foresee the complex development along the particular corridors during the period up to the year 2000 and beyond using the all available information and data on existing networks, the improvements or new constructions underway, as well as national and subregional ECO land transport development plans.

Three following scenarios have been considered for possible options of developing land transport routes from Central Asia to sea ports in the South and East:

Scenario 1 - Existing rail and road routes;

Scenario 2 - covering the period 1995-1997 when the railway line linking Central Asia via Turkmenistan with the port of Bandar Abbas in the Islamic Republic of Iran is planned to be operational;

Scenario 3 - the year 2000 and beyond when the railway networks of ECO member countries are expected to be interconnected and construction of some additional links to ports is completed.

The above scenarios are based on the already indicated fact that railways, because of its advantages for bulk, containerized and long distance transport, will play the key role in freight movement from Central Asia to and from the sea ports, as well as on the fact that the new improved railway line linking Central Asia with the sea ports in China will provide for faster movement of much higher cargo volumes than at present.

3.2. Scenario 1 Existing Rail and Road Routes Railways

There is no direct railway connection at present (Fig. 3.2) of CAR with the ports in the South in the Islamic Republic of Iran and Pakistan.

However, the CAR railway networks are linked via Druzba station at the Kazakhstan/China border with a main railway line in China which provides access to three major sea ports (Fig.3.3).

This railway line stretching from major ports of China (Lianyungang, Qindao, Shanghai) to Urumqi-Druzba-Almaty-Tashkent-Mary-Parahat-Ashgabat and later to Seraks-Meshad (when it is completed in 1996) is foreseen to be an additional to Trans-Siberian railway link between China, via CAR and ECO subregion, and Europe.

China considers it to be a portion of the "Asia-Europe landbridge" on the Chinese territory and is attaching great attention to its promotion and development.

FIGURE 3.2. SCENARIO 1: LAND TRANSPORT ROUTES TO SEA PORTS IN THE SOUTH

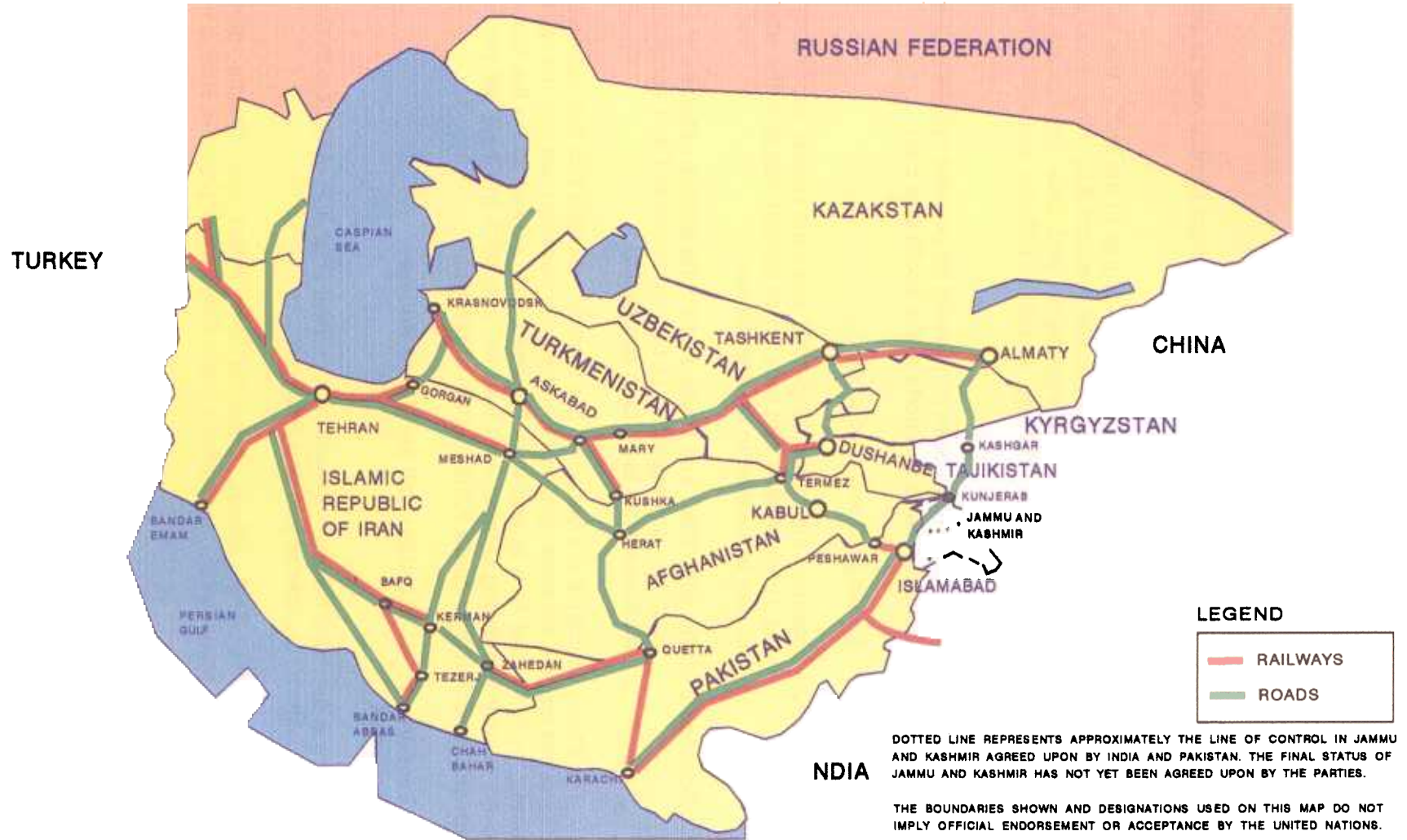
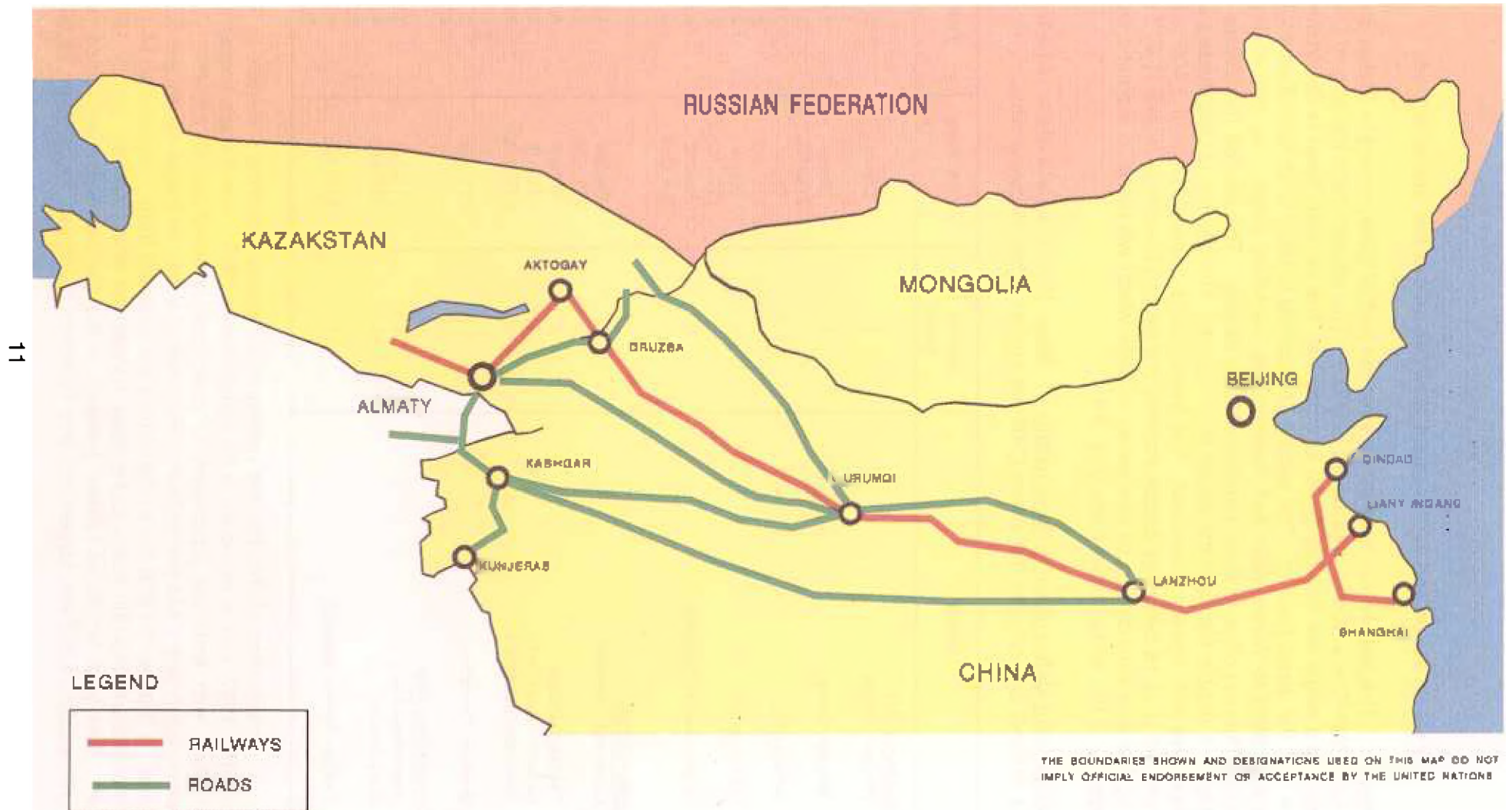


FIGURE 3.3. SCENARIO 1: LAND TRANSPORT ROUTES TO SEAPORTS IN THE EAST (CHINA)



Present status and improvement activities on this line are as follows:

China: The railway line is 4,130 km from the port of Lianyungang to Alatan Shankow at the Kazakhstan/China border with seven sections. The section from the port of Lianyungang to Pisian is a single line with the diesel locomotives. The section Pixian to Zhengzhou is a double line with the diesel traction. The section Zhengzhou to Baoji is an electrified double line. The section Baoji to Wuwei have two independent electrified single line, one is Baoji-Zhongwei-Wuwei railway, other is Baoji-Lanzhou-Wuwei railway. The section from Wuwei to Urumqi is already a double line with the diesel locomotives. The section Urumqi-Alatan Shankow is a single line with diesel locomotives. The freight trains capacities are of 3,400 to 3,800 t. The project of US\$ 18 billion on double tracking the section Lanzhou-Urumqi (1,622 km) is well in progress and expected to be completed in 1995 which will result in dramatic increase of the capacity of this whole railway line (Fig. 3.4).

Kazakhstan-Uzbekistan-Turkmenistan: Basic technical data of the main railway lines in the national territories of the above CAR are shown in the following table.

Sections	Number of tracks	Locomotives	Train load
KAZAKHSTAN			
Druzba-Aktogai	1	Diesel 2TE-10L	3,200 3,200
Aktogai-Almaty	1	Diesel 2TE-10L	3,600 2,700
Almaty-Chu	1-2	Diesel 2TE-10L	3,600 2,700
Chu-Dzambul	2	Diesel 2TE-10L	4,500 2,700
Dzambul-Aris-Chengeldi	2	Electric 3VL-805	4,500 2,700
UZBEKISTAN			
Chengeldi-Tashkent	2	Electric 2VL-60K	4,500 2,800
Tashkent-Dzizak	2	Diesel	4,500
Dzizak-Samarkand	2	2TE-10L	2,800
Samarkand-Bukhara	1-2	2TE-10L	3,800 2,800
Bukhara-Chardzhow	1-2	2TE-10L	3,200 4,200
TURKMENISTAN			
Chardzhow-Mary	1	2TE-10L	3,200
Mary-Tedzen	1	2TE-10L	4,200 3,200
Tedzen-Seraks (project)	1	2TE-10L	4,200 3,200

Construction of the 132 km railway line Tedzen (Parahat) - Seraks in Turkmenistan started in 1992, and is expected to be completed in 1996. The Seraks border station will be furnished with technical equipment to overcome break-of-gauge problem (1,520 mm in Turkmenistan and 1,435 mm in Islamic Republic of Iran). Its target capacity is 5.3 million tons a year. It is expected that this traffic volume will originate from: Kazakhstan (4,150,000 tons), Turkmenistan (545,000 tons), Uzbekistan, Kyrgyzstan and Tajikistan (jointly 195,000 tons) a year. The total length of railway network in the Central Asian subregion is 19,500 km (Turkmenistan 1,800 km, Uzbekistan and Tajikistan 4,200 km; Kazakhstan 13,500 km).

FIGURE 3.4. SCENARIO 1: RAILWAY ROUTE FROM CENTRAL ASIA TO SEAPORTS IN CHINA



Technical characteristics of the main railway lines in the Central Asian subregion corresponds with first class standards.

In order to provide higher level of railway service, it is planned to double the line section between Parahat-Chardzhou (315 km), and construct additional 202 km double line, with electrification of 605 km along the section Chardzhou-Samarkand-Mehrat. At present strengthening of this line is in progress by electrifying sections Chu-Dzambul, and Chu-Almaty (316 km), as well as doubling 42.1 km of the line. Completion is expected by the end of 1995.

Works is also in progress at Druzba station where strengthening the capacity takes place with the view to handle 2.7 million tons of freight by the end of 1995. Improvements are also being done on the Aktogai-Druzba section.

Islamic Republic of Iran

The Iranian section of the line, from Turkish border to Tehran and Meshad is a single line, with the Tehran - Meshad section to be doubled in the Second Development Plan. With the construction of a new section between Maine and Tabriz the operation length of the main railway line will be shortened by 110 km, which means time and cost saving. The technical capacity of the Tehran-Meshad section of the line is high and allows passenger trains to run at a speed of 120 km per hour. The 170 km Meshad-Seraks section (the link with Turkmenistan which is under construction) will be a single line with diesel traction.

As the Islamic Republic of Iran/Turkey railway link provides a connection to Europe, a very brief description of the main railway line, up to Istanbul in Turkey, is as follows:

The railway line in Turkey is a single line, the 420 km section between Istanbul and Ankara is electrified and equipped with central dispatching system. The line improvement activities are reportedly taking place.

Capacity problems have been experienced because ferry services are used over the Lake Van. To overcome this bottleneck the following two alternatives are considered:

1. Construct 127 km of a new line around Lake Van, with 37 tunnels (approximate length of 62 km) and 5 viaducts (which would be extremely costly); and
2. Construct a railway line from Lake Van to Nahichavan (Azerbaijan) from which point there is an existing railway connection to Iran.

The decision however has yet to be made.

Rail ferry connection across the Bosphorus straight represents another capacity problem.

Roads:

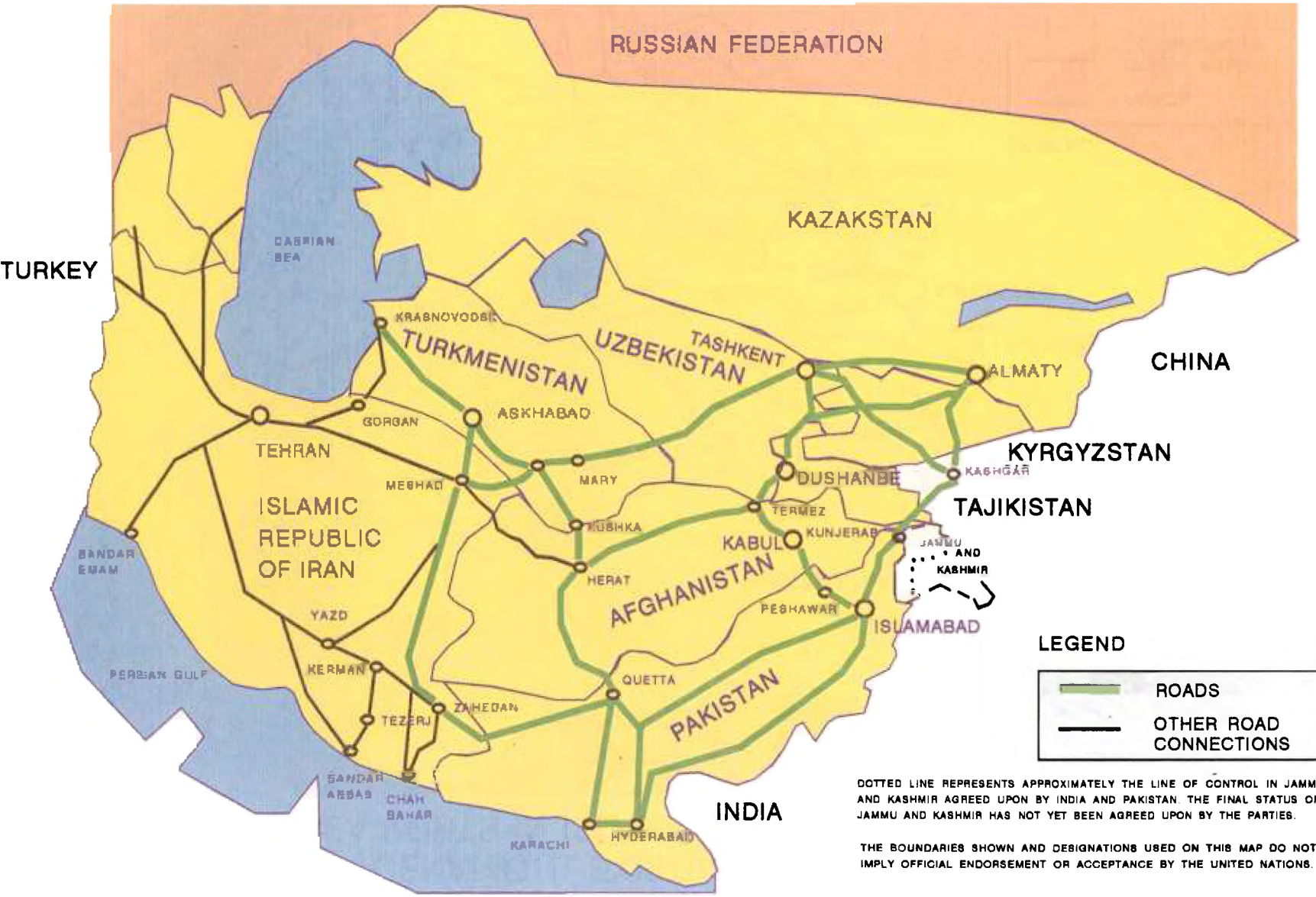
At present the Central Asian subregion is connected to the sea ports in the South through the national road networks in the Islamic Republic of Iran and Pakistan (Fig. 3.5 and 3.6 respectively).

FIGURE 3.5. SCENARIO 1: EXISTING ROAD ROUTES FROM CAR TO SEA PORTS IN ISLAMIC REPUBLIC OF IRAN

15



FIGURE 3.6. SCENARIO 1: EXISTING ROAD ROUTES FROM CAR TO KARACHI PORT



DOTTED LINE REPRESENTS APPROXIMATELY THE LINE OF CONTROL IN JAMMU AND KASHMIR AGREED UPON BY INDIA AND PAKISTAN. THE FINAL STATUS OF JAMMU AND KASHMIR HAS NOT YET BEEN AGREED UPON BY THE PARTIES.

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Connections to/from the ports in the South via Islamic Republic of Iran

From Turkmenistan, via four border-crossing points, the following road routes provide access to the Iranian ports in the Persian Gulf:

1. Gudriolum/Incheborum	- Tehran-Bandar Imam	
	- Bandar Abbas	1,310 km
	- Chah Bahar	2,190 km
2. Gaudan/Badjigiran	- Rajai, Bandar Abbas	1,971 km
	- Chah Bahar	1,858 km
3. Artik/Loftabad	- Rajai, Bandar Abbas	1,562 km
	- Chah Bahar	1,925 km
4. Seraks	- Rajai, Bandar Abbas	1,469 km
	- Chah Bahar	1,832 km

The road sections Badjigiran-Imamgholi-Ghoochan and Loftabad-Dargar-Ghoochan are under construction to ensure linkage with CAR via Turkmenistan.

From Almaty (Kazakhstan) and Tashkent (Uzbekistan) the road route options to ports of Bandar Abbas and Chah Bahar are the following:

a) Almaty-Ashgabat-Meshad-Yazd-Bandar Abbas	5,300 km
b) Tashkent-Bandar Abbas	4,800 km
c) Almaty-Bandar Abbas (via Yazd, road under construction in Iran)	4,008 km
d) Tashkent-Bandar Abbas (via Yazd)	3,218 km

Connections to the sea ports in Pakistan are as follows:

1. From Turkmenistan: Kushka-Turghundi (Afghanistan)-Herat-Kandahar-Chaman (Pakistan)-Port Karachi (1,658 km);
2. From Uzbekistan: Termez-Kabul (Afghanistan)-Kandahar-Chaman- (Pakistan)-Port Karachi (1,968 km);
3. Termez (Uzbekistan)-Kabul (Afghanistan)-Peshawar (Pakistan)-Port Karachi (2,318 km);
4. Almaty (Kazakhstan)-Torogart (China)-Kunjerab-Gilgit-Rawalpindi (Pakistan)-Port Karachi; (3,517 km);
5. Ashgabat (Turkmenistan)-Badjigiran (the Islamic Republic of Iran)-Zahedan-Kohi Taftan (Pakistan)-Quetta-Port Karachi (2,575 km);
6. Baku (Azerbaijan)-Astara (the Islamic Republic of Iran)-Zahedan-Kohitaftan (Pakistan)-Quetta-Port Karachi (3,600 km).

It is to be noted that the Karachi Port and Port Qasim are located close to each other and for practical purposes, e.g. distance/time calculation to remote destinations in CAR, may be considered as one location. The distances by sections are as indicated below:

ROAD DISTANCES FROM KARACHI TO MAJOR DESTINATIONS IN CAR

Karachi	- Chaman	= 840 km
Chaman	- Kandahar	= 120 km
Kandahar	- Herat	= 573 km
Herat	- Kushka	= 125 km
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Karachi	- Kushka	= 1,658 km
<hr style="border-top: 1px dashed black;"/>		
Karachi	- Chaman	= 840 km
Chaman	- Kandahar	= 120 km
Kandahar	- Kabul	= 508 km
Kabul	- Termez	= 500 km
<hr style="border-top: 1px dashed black;"/>		
Karachi	- Termez	= 1,968 km (via Kandahar)
<hr style="border-top: 1px dashed black;"/>		
Karachi	- Peshawar	= 1,504 km
Peshawar	- Kabul	= 314 km
Kabul	- Termez	= 500 km
<hr style="border-top: 1px dashed black;"/>		
Karachi	- Termez	= 2,318 km (via Kabul)
<hr style="border-top: 1px dashed black;"/>		
Karachi	- Rawalpindi	= 1,568 km
Rawalpindi	- Khunjerab	= 901 km
Khunjerab	- Torogart	= 562 km
<hr style="border-top: 1px dashed black;"/>		
Karachi	- Almaty	= 3,517 km
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From Almaty (Kazakhstan) to Karachi port (Pakistan) there are the following road route options (Fig. 3.6):

- a) via Tashkent (Uzbekistan) & National Highway No. 5 in Pakistan:
Almaty (Kazakhstan)-Bishkek (Kyrgyzstan)-Tashkent-Samarkand-Termez (Uzbekistan)-Kabul-Torkham (Afghanistan)-Peshawar-Lahore-Karachi (Pakistan) (4,099 km)
- b) via Tashkent (Uzbekistan), Afghanistan and Indus Highway in Pakistan:
Almaty (Kazakhstan)-Bishkek (Kyrgyzstan)-Tashkent-Samarkand-Termez (Uzbekistan)-Kabul-Torkham (Afghanistan)-Peshawar-D.G.Khan-Kotri-Karachi (Pakistan) (3,727 km)
- c) via Afghanistan and National Highway No. 25 in Pakistan:
Almaty (Kazakhstan)-Bishkek (Kyrgyzstan)-Tashkent-Samarkand-Karshi -Termez (Uzbekistan)-Mazar-i-Sharif-Herat-Kandahar (Afghanistan) -Quetta-Khuzdar-Karachi (Pakistan) (3,783 km)
- d) via Karakoram Highway and Pakistan National Highway No. 5:
Almaty (Kazakhstan)-Bishkek (Kyrgyzstan)-Torogart-Kushka-Khunjerab (China)-Hassanabdal-Rawalpindi-Lahore-Karachi (Pakistan) (3,708 km)

- e) via Karakoram Highway and Indus Highway in Pakistan:
Almaty (Kazakhstan)-Bishkek (Kyrgyzstan)-Torogart-Kashgar-Khunjerab
(China)-Hassanabdal-Peshawar-D.G. Khan-Kotri-Karachi 3,570 km)
- f) via Turkmenistan and Afghanistan:
Almaty (Kazakhstan)-Bishkek (Kyrgyzstan)-Tashkent-Samarkand
-Bukhara (Uzbekistan)-Mary (Turkmenistan)-Torogart-Herat
-Kandahar (Afghanistan)-Quetta-Khuzdar-Karachi (Pakistan) (3,827 km)
- g) via Tajikistan Afghanistan and Indus Highway in Pakistan:
Almaty (Kazakhstan)-Bishkek (Kyrgyzstan)-Dushanbe (Tajikistan)
-Termez (Uzbekistan)-Kabul (Afghanistan)-Peshawar-
D.G.Khan-Karachi (Pakistan) (3,751 km)
- h) via Tajikistan, Afghanistan and National Highway No. 25 in Pakistan:
Almaty (Kazakhstan)-Bishkek (Kyrgyzstan)-Dushanbe (Tajikistan)
-Termez-Mazar-i-Sharif-Herat-Kandahar (Afghanistan)-Quetta
-Khuzdar-Karachi (Pakistan) (3,893 km)

According to the Ministry of Transport and Communications of Kazakhstan, the following road routes from Kazakhstan to the sea ports in Pakistan, appear to be most feasible and safe:

via Karakoram Highway between China and Pakistan and the national highways N5 or N6 in Pakistan;

Almaty (Kazakhstan)-Bishkek (Kyrgyzstan)-Torugart-Kashgar-Khunjerab (China)-Hasanabdan-Rawalpindi-Lahore-Karachi;

Via Islamic Republic of Iran:

Almaty-Tashkent (Uzbekistan)- Askhabad (Turkmenistan)- Badjigiran-Zahedan-Kohitaftan (Pakistan)-Quetta-Karachi;

To provide connection for road transport with western Kazakhstan, Russian Federation, and Europe, the following route would be proposed: Karachi-Quetta-Kohi Taftan-Zahedan-Badjigiran-Askhabad-Krasnovodsk-Bekdash-Aktau-Atyrau-Saratov (Russian Federation).

Connections to the sea ports in China

Road connections from CAR to sea ports in China are in principle via road border-crossing points in Kazakhstan, Kyrgyzstan and Tajikistan. All major road routes from those points lead to the capital city of Urumqi in western China, which is located in around 700 km distance from the border.

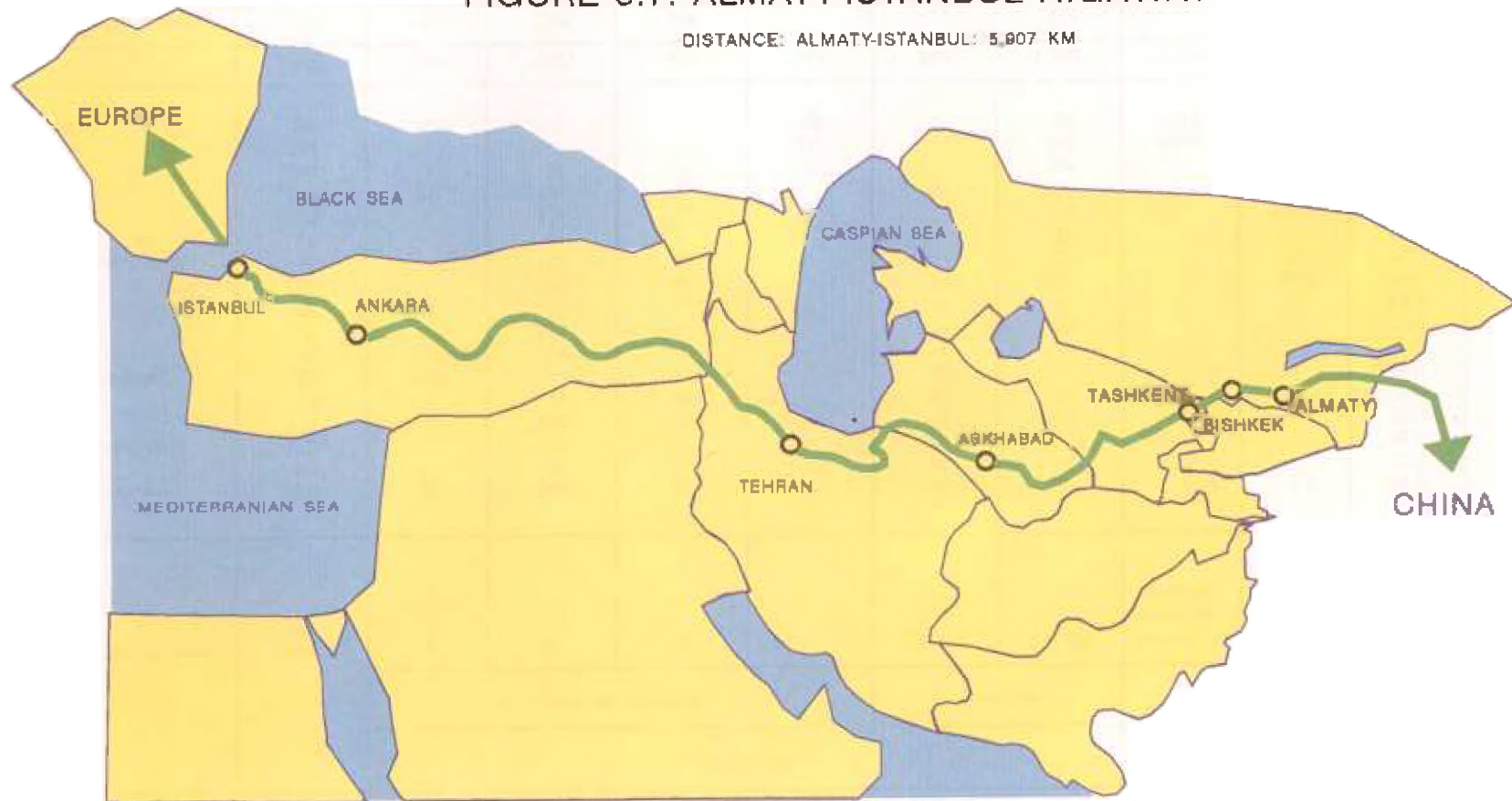
The Central Asia subregion is also connected with the backbone east-west highway (Almaty-Istanbul) which may provide a road link between China and Turkey.

The route has a total length of 5,907 km with three border-crossing options between Turkmenistan and Islamic Republic of Iran, namely at Seraks, Gaudan and Gudriolum. The importance of this route (Fig. 3.7) was recognized and supported in 1992, through the agreement between seven ECO member countries: the Islamic Republic of Iran, Republic of Kazakhstan, Kyrgyzstan, Uzbekistan, Turkmenistan, Turkey and Pakistan. Design, construction and reconstruction of some sections has already started. The highway linking Istanbul, Tehran, Ashgabat, Tashkent, Bishkek and Almaty is expected to be completed with the high technical standards required for international traffic.

The above highway when it is completed might be considered as a partly achievement of objective 1 of the ECO Outline Plan.

FIGURE 3.7. ALMATY-ISTANBUL HIGHWAY

DISTANCE: ALMATY-ISTANBUL: 5,907 KM



**TABLE 3.1 TECHNICAL DATA OF THE ALMATY - ISTANBUL HIGHWAY
ALMATY - TASHKENT - ASHGABAT - GUDRIOLUM (Central Asian Part)**

City and State Borders	Distance Km	Length Km						Reconstruction cost in million ruble			Total
		Technical category				Pavement		(in 1991 prices) Upgrading			
		I	II	III	IV	Capital	Overlay	Up to technical category III	Up to technical category III	New overlay roads at category I,II	
Almaty											
(Kyrgyzstan border)	220	62	148	10	-	190	30	-	8.0	97.0	105.0
Bishkek	24	-	24	-	-	24	-	-	-	10.0	10.0
(Kazakhstan border)	112	-	112	-	-	70	42	-	-	46.0	46.0
Dzambul	177	6	156	15	-	74	103	-	12.0	67.0	79.0
Chimkent	174	-	91	83	-	98	76	-	68.0	37.0	105.0
(Uzbekistan border)	102	102	-	-	-	98	4	-	-	59.0	59.0
Tashkent	18	-	14	4	-	14	4	-	3.0	8.0	11.0
Dzizak	170	-	170	-	-	110	60	-	-	70.0	70.0
Samarkand	106	-	-	-	-	70	36	-	-	43.0	43.8
Buhara	268	-	226	42	-	35	233	-	35.0	93.0	128.0
(Turkmenistan border)	125	-	105	20	-	-	125	-	16.0	43.0	59.0
Chardzhou	31	-	31	-	-	-	31	-	-	13.0	13.0
Mary	239	-	114	125	-	-	239	-	103.0	47.0	150.0
Ashgabat	352	21	331	-	-	65	287	-	-	148.0	148.0
Kizil Avrat	224	-	53	171	-	-	224	-	141.0	22.0	163.0
Kizil Atrek	242	-	-	-	242	-	242	109.0	-	-	109.0
Gudriolum	22	-	-	-	22	-	22	10.0	-	-	10.0
Total:	2,606	191	1,681	470	264	848	1,758	119.0	386.0	803.0	1,308.0
On Kazakhstan territory:	673	170	395	108	-	460	213		88	260	348

If Gudriolum is selected as the border-crossing point, respective sections of the highway will be: Kazakhstan - 673 km; Kyrgyzstan - 136 km; Uzbekistan - 687 km; Turkmenistan - 1,110 km, Islamic Republic of Iran - 1,440 km and Turkey - 1,861 km.

Technical data on reconstruction and upgrading of the highway sections in Central Asia, with related cost estimates, are given in the Table 3.1.

Thus Scenario 1 features railway route from Central Asia to sea ports of China and road and/or road-cum-rail routes to sea ports of the Islamic Republic of Iran and Pakistan.

In general it is very likely that the existing rail and road routes are in different conditions with some routes/sections in need of improvement or renovation. Unfortunately due to time and budgetary constraints it was not possible to undertake detail survey of the routes.

3.3 SCENARIO 2 (1996-1997 period)

Scenario 2 is based on existing and available by 1996 infrastructure as well as on projections for the period 1996-1997 when a number of on-going national rail and road projects, being at the same time important international links, are to be completed (Fig. 3.8).

Railways

The construction of Tedzen (Parahat)-Seraks-Meshad missing railway link between Turkmenistan and the Islamic Republic of Iran is expected to be completed in 1996 to make feasible movement of 1.5-2 million tons of freight a year.

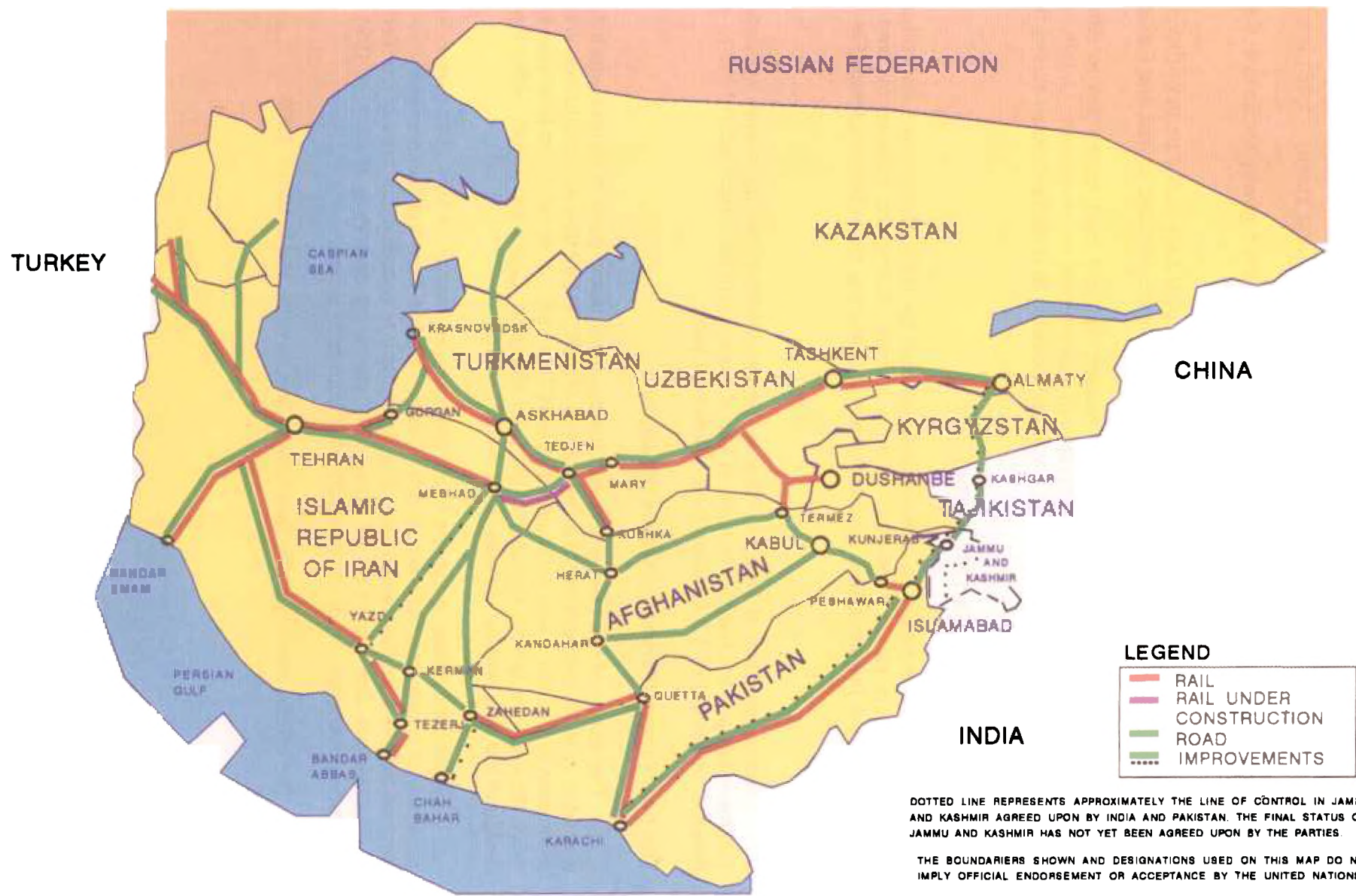
The new Tedzen (Parahat) - Seraks railway line

The design of this railway line with the border-crossing point at Seraks was initiated way back in 1968, but because of a low volume of traffic at that time its construction was not recommended. Later it was estimated that in 1975 a traffic of about 1.5 m tons/year would move between the Islamic Republic of Iran and Mongolia, China and Japan. After that the design of the new railway line was done in 1977-1978.

A joint committee of experts from both countries met on 31 May 1989 to discuss the possibility of construction of the sections: Tedzen-Seraks from the Turkmenistan side and Meshad-Seraks from the Iranian side, and Agreement to construct the railway line Tedzen-Seraks-Meshad was signed on 28 June 1989 stipulating beginning of work in 1991 and simultaneous completion of construction work from both sides.

The official opening of the new railway line, is expected in March 1996.

FIGURE 3.8. SCENARIO 2 (1996- 997)



In the first year of operation movement of 1.5 m tons of freight traffic is expected, with the respective figures for the years 2000 and 2005 reflected in the table below.

Type of traffic	Year 2000		Year 2005	
	'000 t	% of total	'000 t	% of total
1. Export	771	20.2	812	17.2
2. Import	1,774	46.5	1,807	38.4
3. Inter-station	70	1.8	86	1.8
4. Total (1+2+3)	2,615	68.5	2,705	257.4
5. Transit - for Iran	1,160	30.4	1,930	41.0
- for CIS	40	1.1	70	1.6
Total	3,815	100.0	4,705	100.0

Source: New Railway Line - Tedzen (Mary) - Seraks, Tashgiprotrans, Tashkent, 1991. The movement of tourists to explore the historic and cultural treasures of Middle East and Central Asia is also expected with the forecast for passenger traffic in the years 2000 and 2005 as follows:

From-to	Train category	Number of wagons	Pairs of trains per day	
			2000	2005
Tashkent-Tehran	Express	10	0.5	0.5
Ashgabat-Tehran	Express	10	0.5	0.5
Ashgabat-Seraks	Local	10	0.5	0.5
Chardzhou-Mary-Seraks	Local	10	0.5	0.5
Beijing-Istanbul	Express	10	0.5	0.5
TOTAL	-	-	2.5	2.5

*) Source: New Railway line Tedzen (Mary) - Seraks, Mintransstroy USSR, GUP and KS. Tashgiprotrans, Tashkent 1991.

It is important to note that for the expected traffic only 40% of the available line capacity will be reportedly used in 2005.

Basic technical data of the Tedzen-Seraks railway line project are:

Line	Single
Rolling gradient	9‰
Operating length of line (between stations)	121.2 km
Construction length:	
new railway lines	133.08 km
secondary lines	16.48 km
Length of tracks in stations	850 m

Construction time	57 months
Locomotives for freight trains	2 TE 10
Signalling and communication (when trains passing)	
Frequency of trains in the 10th year of operation	DC EC arrows
Freight trains (Pairs)	6
Passenger trains (Pairs)	2.5

The Seraks railway station is designed as a complex with railway operations and custom services facilities provided, including all physical infrastructure and facilitation services required at border-crossing points. The station lay-out, technical equipment and facilities will enable: change of wheels - bogies on wagons from 1,520 gauge to 1,435 railway gauge and back, freight transshipment including 20' containers. Switch yards for train make-up, depots, maintenance workshops, passenger terminal, custom services, etc. will also be in place.

The customs control is foreseen to take place at the same time when bogies are changed and will last one hour for freight trains and 1-12 hours for passenger trains.

Total construction cost of 132.48 km of new main railway lines, and of 15.28 km secondary lines in Turkmenistan, was estimated (in 1991 prices) 433,219,660,000 rubles, out of which, construction and mounting works was 328,197,200,000 roubles, plus cost of other structures and facilities such as: production plants 303,334,210,000 rubles, construction of civil objects 92,027,000 rubles, industrial objects 27,866,510,000 rubles.

Railway transport activities at the border-crossing station will follow the same activities as stated in the Iran-Soviet (former) Agreement for the railway border station in Julfa, according to which each country has to do the transloading and change of bogies at its territory. It means that all handling of freight, containers, wagons, etc. of domestic export or transit goods has to be done at Seraks stations on Turkmenistan side, as well as on the Iranian side. There are costs and also revenues from operations such as: transport costs and revenues of export, import and transit goods, handling charges at border-crossings for changes of wagons bogies with export, import or transit goods, for handling transit containers, compensation for use of wagons adapted to 1,435 mm gauge at Iranian railways etc.

Revenues are calculated for transit goods according to the agreement between two countries.

Following the above principles total revenues of the Tedzen-Seraks railway line from transport of export, import and transit goods were estimated for the year 2000 and 2005, as follows:

Revenues:	Year 2000	Year 2005
Total	63.8 ^{*)}	114.0 ^{*)}
Out of it:		
1. For freight train operations at Seraks station	1.7	2.6
- for wagon bogie changes with export, import and transit goods	1.4	2.1
- for transloading transit goods in containers	0.3	0.5
2. For time the wagons are used by Iranian railways	0.4	0.6
3. For transporting export and import goods on the railway network	4.2	6.3
4. For transporting transit goods on	57.5	104.5

^{*)} in million rubles (1991 year)

The unloading space for railway at Loftabad is established and it is connected to Turkmenistan railway network at Artik station. The loads shall be carried by railway at Loftabad station and from there to Meshad they will be transported, either by rail or road, to other destinations. The distance between Meshad and Loftabad is about 270 km.

The completion of the missing railway link Tedzen-Seraks-Meshad is certainly of paramount importance as railway networks of Central Asia, the Islamic Republic of Iran and Turkey as well as China will be interconnected thus providing the countries in the corridor with an opportunity of direct railway communication, providing a direct rail link to and from Central Asia (and China), as well as to/from Turkey (and onward to Europe).

The construction of a missing link in the Islamic Republic of Iran between Tezerj and Bandar Abbas port has been completed, and this railway section has been officially opened for operation on 18 March 1995.

Improvement of the Central Asian main railway lines is also programmed, as reflected in Table 3.2.

**TABLE 3.2 PLAN FOR THE IMPROVEMENT OF THE
RAILWAY LINES IN KAZAKHSTAN, UZBEKISTAN AND TURKMENISTAN**

NO.	ITEMS	TIME OF COMPLETION YEAR	COST IN Million RB (1991)	LENGTH
1.	Completion work at Druzba Station and reconstruction of the line from Druzba to the border	1990-1997	211.5	87 km switch 12 km main line
2.	Strengthening of the line Aktogay-Druzba	1990-1997	48.0	3.5 km switch 16 traffic lights 165 km commu.
3.	Development of Druzba station and strengthening of Aktogay-Druzba-state border railway line (second stage)	1996-2000	760	304 km
4.	Second line on the section Aktogay-Almaty	2002-2006	591.0	557 km
5.	Electrification of the section-Almaty-Chu	1996-2001	262.0	318 km
6.	Electrification of the section Almaty-Sari-Ozek	1997-2000	136.0	190.6 km
7.	Second line on the section Almaty-Chu	2001-2003	155.0	142 km
8.	Development of telecom. and information systems on section: Druzba-Aktogay-Almaty-Aris-Chengeldi	1995-1998	5.0	1,800 km
9.	Development of marketing and commercial links	1995-2000	-	-
10.	Reconstruction of national sections of the Trans Asian Railway Mainline increasing travel speed of passenger trains (double)	1995-2005	-	-
11.	Modernization and construction of new objects for providing international standard services for passenger and tourist trains	1995-2005	-	-
12.	Construction of a container terminal in Almaty	2002-2005	-	-
13.	Reconstruction of freight terminals for efficient freight handling at stations Almaty, Dzambul and Chimkent	2002-2005	-	-
14.	Electrification of sections in Uzbekistan and Turkmenistan	1994-2000	-	-
15.	Electrification of sections: - Dzizak-Superfosfatnaya - Superfosfatnaya-Buhara	1994 up to 2000	- -	131 km 231 km
16.	Completion of construction of missing railway link Tedzen-Seraks (Turkmenistan)	1996	-	132 km
17.	Completion of construction section Seraks-Meshad (Islamic Republic of Iran)	1996	-	165 km
18.	Strengthening of the Seraks station and electrification of Seraks-Tedzen line	1996-2000	-	132 km

Roads:

Improvement of road network and construction of missing links and rehabilitation of existing roads has been listed as one of key elements (4.1.3) of the ECO Outline Plan to be completed in stages by the year 2000.

According to that, and as access from CAR to the sea ports in the South is at present provided mostly by roads, a number of road projects are in progress either to complete the missing links or improve the network.

Along the road corridor from Turkmenistan to Iranian ports, the road from both side at Gaudan-Badjigiran border-crossing is planned to be improved to allow heavy trucks and containers to cross all year round.

Road improvements at other border-crossing points are also expected to be accomplished, such as the road sections Kizil Atrek-Gudriolum and Seraks-Meshad. Improvements are also to be carried out in the corridor to ports of Bandar Abbas (Meshad-Gonabad-Yazd, and Gonabad-Kerman section), as well as on Zahedan-Chah Bahar port section.

Routes via Afghanistan to Karachi port in Pakistan are in principle the shortest (Fig. 3.9). There is however a great need for rehabilitation of the whole road system, construction of missing links, reconstruction and improvement of the existing roads to provide reliable road transport services. If the situation in Afghanistan is normalized, intensive road infrastructure development activities can be expected.

The Pakistan National Highway Development Programme stipulates the intensive upgrading of the existing and construction of new roads and major highways to meet increasing domestic and also transit needs. Progress is also expected in dualization of highways, upgrading the standards, and increasing the capacity of those sections of national highways that carry traffic to ports. (For example, Indus Highway, National Highway No. 25 Chaman-Karachi, etc). Improvement of sections of the Karakoram Highway is also worth mentioning.

Along with the rail and road infrastructure development, the ports in the Islamic Republic of Iran and Pakistan are also accomplishing their investment programmes to provide sufficient capacities for efficient handling of the growing volumes of Central Asian cargo.

According to adopted Scenario 2, it is expected that the basic improved land transport infrastructure will be in existence by 1997 to provide much better access of CAR to the sea ports in the South and the East. For railways, it is the completion of the two most crucial missing links, namely the Tedzen-Seraks-Meshad and the Sirjan (Tezerj)-Bandar Abbas railway links, both of them of national, subregional, and regional importance. One of those two links, namely the missing railway section Tezerj-Bandar Abbas has been already opened for operation in 1995.

Thus the major transport change to happen during the Scenario 2 period 1996-97, is the establishment of direct railway link from Central Asia to the port of the Bandar Abbas in the Islamic Republic of Iran via Tedzen-Seraks-Meshad-Tehran-Bafq-Sirjan-Tezerj.

The northern corridor of the Iranian land transport network has capability to transport and transit about 5 million tons of goods at the north-eastern borders, and about 3 million tons to the neighbouring CAR at the Caspian Sea shores. This network could be expanded to a great extent in a near future.

The improvement of roads will also significantly contribute to the improvement of the whole land transport in service of transit to/from the sea ports.

In this connection it needs to be kept in mind that the whole land transportation "landscape" will change accordingly, since railways would likely gradually pick up and intercept servicing transit cargo which is at present done by partly or mostly (depending on what corridor and what port destinations) road transport.

Lastly, the pace of growth of the demand for railway services and their use will greatly depend on how aggressive and effective is going to be marketing of newly available railway services under the changed conditions of the free market oriented economies of the all countries concerned.

3.4 Scenario 3 (year 2000 and beyond)

This scenario covers the period from the year 2000 capitalizing on long term planning and the results from implementation of the ECO Outline Plan for the Development of Transport Sector of 1993 and the improvement of the railway line to sea ports of China.

In adopting the Outline Plan the transport ministers of the ECO countries decided to provide the shortest connections of land-locked Central Asian countries to Persian Gulf ports as well as Ports of Karachi and Qasim in Pakistan. Based on the existing by 1997 ECO railway networks, a completion of missing railway links by the year of 2000 is to start with design and construction of the following railway lines:

1. Kushka (Turkmenistan) - Herat (Afghanistan) - Kandahar-Chaman (Pakistan);
2. Kerman-Zahedan (Islamic Republic of Iran);
3. Meshad-Bafq (Islamic Republic of Iran);
4. Bandar Torkmen (Islamic Republic of Iran) - Ghizil Atrek (Turkmenistan) Gazandzik.

As regards the railway links from sea ports of Pakistan to CAR via Afghanistan, there are two possible alternative routes (Fig. 3.9):

(a) Missing (approximately 750 km) link from Landikotal (Pakistan) to Termez (Uzbekistan) via Jalalabad, Kabul and Mazar-i-Sharif in Afghanistan. The terrain is mountainous and the alignment will entail sharp curves, steep gradients (requiring banking of locomotives) and has to pass through tunnels at some sections. Even the existing alignment between Jamud and Landikotal (Pakistan) has a steep gradient and sharp curves, requiring reversing of trains with restricted maximum load of 225 tons only.

(b) Missing link (about 800 km) from Chaman (Pakistan) to Kushka (Turkmenistan) via Kandahar and Herat, which would traverse generally plain and semi mountainous area. It would not reportedly make much problem for the construction of the line at moderate cost. There is however a problem in haulage of loads up to 500 tons per train on Sibi-Quetta Section (40 km), where banking engines have to be deployed.

FIGURE 3.9. ROADS AND PROPOSED RAILWAYS IN AFGHANISTAN



LEGEND

- ROADS
- PROPOSED RAILWAYS

THE BOUNDARIES SHOWN AND DESIGNATIONS USED ON THIS MAP DO NOT IMPLY OFFICIAL ENDORSEMENT OR ACCEPTANCE BY THE UNITED NATIONS.

The track gauge of Pakistan railways is 1,676 mm and that in the CAR 1,520 mm. It would thus be essential to provide facilities for transshipment or bogie change of wagons at the break-of-gauge points at Kushka or Chaman, depending which gauge will be adopted in Afghanistan in a future.

A feasibility study and detailed engineering survey of that route is estimated to cost \$US 1.5 million. According to information from Pakistan railway authorities the study would take about one and a half year.

The project itself is estimated to cost \$US 500-600 million approximately.

The Zahedan-Kerman 540 km railway link is the missing section in the Iranian network to provide connection to Pakistan. In addition simultaneous and coordinated action is required to upgrade the Quetta-Taftan section in Pakistan. Both governments are mobilizing resources to accomplish the tasks.

The Meshad-Bafq railway link in the Islamic Republic of Iran is also under study to provide connection between CAR and Bandar Abbas port, once the Tedzen-Seraks-Meshad railway link is completed.

The Bandar Turkmen (Islamic Republic of Iran)-Kizil Atrek-Gozandzil (Turkmenistan) railway link will connect the two railway networks along the southern coast of the Caspian Sea.

The Islamic Republic of Iran has put in its programmes a study of a railway line from Meshad to Chah Bahar. This railway line starts from Meshad and after passing Torbat-e-Heidarieh reaches Bajestan-Ferdous-Dayhook and continues from the most eastern point of Loot desert crossing Nosratabad area and ends up at Iransahr and Chah Bahar. From Dayhook a branch of this route leads to Parvadeh coal mine and from there it goes to Chadarmaloo mine. When this route is operational, the distances will be as follows:

Seraks-Bafq-Bandar Abbas: 1,700 km

Seraks-Nosratabad-Chah Bahar: 1,750 km

Seraks-Bajestan-Zahedan-Mirjaveh: 1,430 km

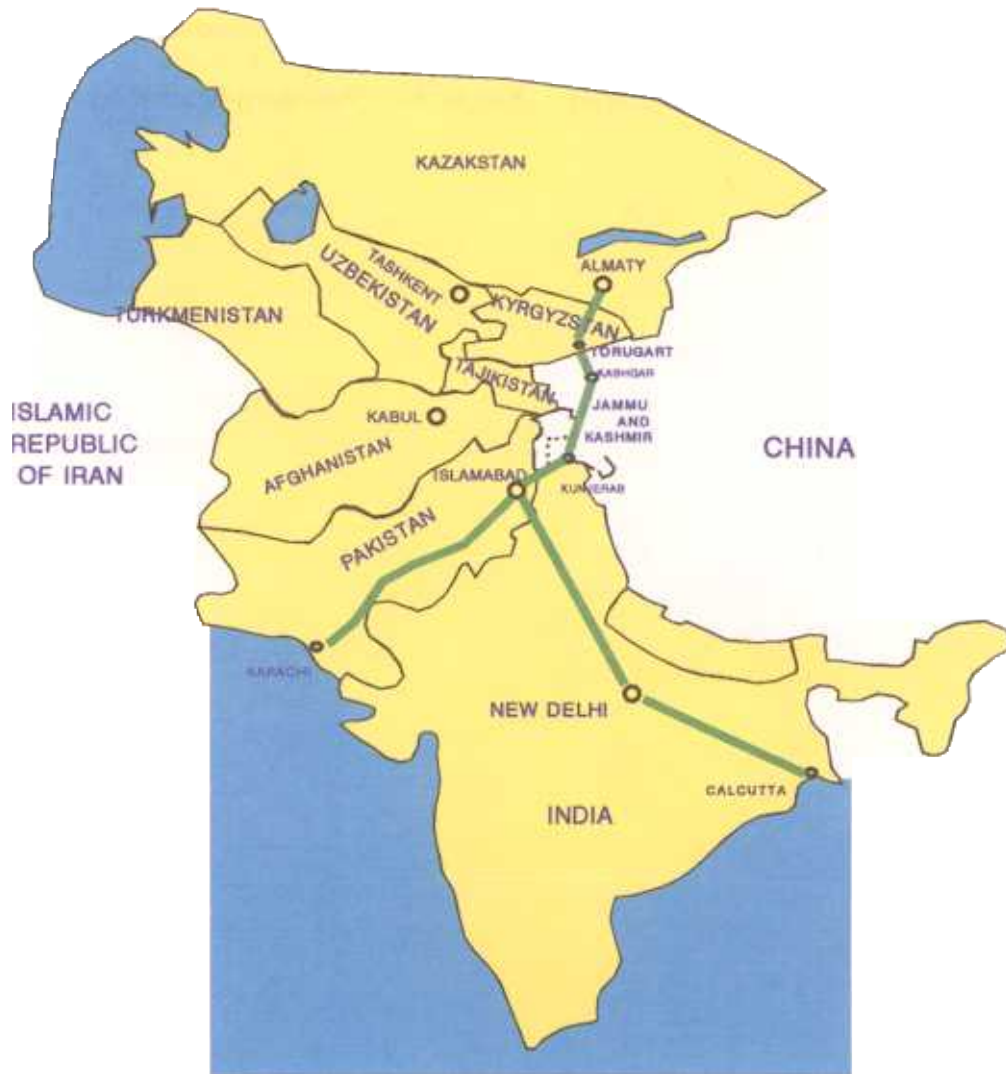
Mirjaveh-Zahedan-Dayhook-Chadormaloo-Meybod: 1,295 km

A new north-south railway line is also considered for construction between Turkmen Bashi (former Krasnovodsk) in Turkmenistan and Uzen in Kazakhstan. Uzen is connected with the main railway lines of Kazakhstan and of the Russian Federation. The construction of approximately 650 km of railway link between Turkmenistan and Kazakhstan would reduce the railway distance between the existing railway network of two countries by more than 1,500 km. The line Uzen-Turkmen Bashi-Gazandzik-Kizil Atrek-Bandar Turkmen (Islamic Republic of Iran) would connect three countries: Islamic Republic of Iran, Turkmenistan and Kazakhstan and also give them an additional outlet to the Russian Federation and Europe.

Construction of missing links and reconstruction of existing parts of the road network will be continued from period 1995-97 and completed by stages, as programmed in the national development plans. There are four major routes from CAR to ports in the Islamic Republic of Iran and Pakistan via Afghanistan and China:

1. Almaty-Bishkek-Tashkent-Termez-Hairaton-Mazar-i-Sharif-Kabul-Jalalabad-Peshawar-Karachi;
2. Almaty-Bishkek-Tashkent-Termez-Hairaton-Herat-Islam Qala-Meshad Persian Gulf;
3. Herat-Frah-Kandahar-Helmand-Karachi, also, Kandahar-Zahedan;
4. Almaty-Torogart-Kashgar (China)- Kunjerab (Pakistan)-Islamabad-Karachi (Fig.3.10).

**FIGURE 3.10. ROAD CONNECTIONS:
ALMATY-KARACHI-CALCUTTA**



DOTTED LINE REPRESENTS APPROXIMATELY THE LINE OF CONTROL IN JAMMU AND KASHMIR AGREED UPON BY INDIA AND PAKISTAN. THE FINAL STATUS OF JAMMU AND KASHMIR HAS NOT YET BEEN AGREED UPON BY THE PARTIES.

THE BOUNDARIES SHOWN AND DESIGNATIONS USED ON THIS MAP DO NOT IMPLY OFFICIAL ENDORSEMENT OR ACCEPTANCE BY THE UNITED NATIONS.

DISTANCE FROM ALMATY TO:	KM
ISLAMABAD	1,790
KARACHI	3,240
NEW DELHI	2,590
CALCUTTA	3,940

The Pakistan Highway Authority has also in its programme to reconstruct and improve the sections of the 806 km Karakoram Highway from Kunjerab (border with China) to Hassanabdai.

Road connection from Almaty to Islamabad is providing the shortest land transport link of Central and Northern Asia with the sea port of Karachi. The distance from Almaty to Islamabad by road is 1,776 km (of which 126 km in Kazakhstan, and 440 km in Kyrgyzstan).

From Islamabad there are two options: to port of Karachi (1,450 km) and via New Delhi to port of Calcutta (approximately 2,150 km). The 61 km section from Almaty to Uzun-Agach is on the main highway to Tashkent. The section to Bistrovka (88 km) is mountainous, climbing up to 2,400 m above the sea level. The road is narrow, needs widening, some engineering structures, improving drainage systems and protection galleries from avalanche.

The Bistrovka-Torogart section (border with China) is of III and IV technical category, but new 40 km construction is needed (see Annex III for technical standards).

Total road rehabilitation/new construction cost along the route: Almaty-Uzun Agach-Bistrovka-Torogart-China border was estimated total 719 million rubles (in 1991 prices).

With the envisaged development of land transport infrastructure in year 2000, no new routes in general are expected in the network to provide access to sea ports in the South or East.

The main infrastructure development features of Scenario 3 (Fig. 3.11) are as follows:

- (a) Completion of the railway link Kerman-Zahedan in the Islamic Republic of Iran which will connect railway networks of that country and Pakistan thus providing a railway route (Seraks, Meshad-Tehran-Kerman-Zahedan-Kohitaftan-Quetta-Karachi) from Central Asia to sea ports in Pakistan.
- (b) Completion of the railway link Meshad-Bafq in the Islamic Republic of Iran providing a shortcut in the Iranian railway network from CAR to the port of Bandar Abbas.
- (c) Completion of the railway line between Bandar Torkmen (Islamic Republic of Iran) and Kizil Atrek-Gozandzik (Turkmenistan), next to the Caspian Sea, providing railway link to the North, with possible future connections with the Russian Federation and Europe, and
- (d) Possibly construction of the railway link Kushka-Herat-Kandahar-Chaman from Turkmenistan via Afghanistan to Pakistan. This connection would provide a direct link from Central Asia to ports in Pakistan (Karachi and Qasim).
- (e) A number of road reconstruction programmes are expected to be accomplished to improve road connections from CAR to the sea ports in the Islamic Republic of Iran and Pakistan via Afghanistan and China, such as: Tashkent-Termez (Uzbekistan)-Hairaton-Mazari-Sharif-Kabul-Jalalabad (Afghanistan)-Peshawar-Karachi (Pakistan); Tashkent-Termez (Uzbekistan)-Hairaton-Herat-Islam Qala (Afghanistan)-Karachi (Pakistan); Kandahar-Zahedan; and, Almaty (Kazakhstan)-Bishkek-Torogart (Kyrgyzstan)-Kushka (China)-Kunjerab (Pakistan)-Islamabad-Karachi.
- (f) Improved railway route linking Central Asia with sea ports of China.

FIGURE 3.11. SCENARIO 3: (YEAR 2000 AND BEYOND) RAILWAY CONNECTIONS



DOTTED LINE REPRESENTS APPROXIMATELY THE LINE OF CONTROL IN JAMMU AND KASHMIR AGREED UPON BY INDIA AND PAKISTAN. THE FINAL STATUS OF JAMMU AND KASHMIR HAS NOT YET BEEN AGREED UPON BY THE PARTIES.

THE BOUNDARIES SHOWN AND DESIGNATIONS USED ON THIS MAP DO NOT IMPLY OFFICIAL ENDORSEMENT OR ACCEPTANCE BY THE UNITED NATIONS.

3.5 OPERATIONAL ASPECTS OF RAILWAY OPTIONS

In general for long distances and low value goods land transport services can be economically provided only by railways. Railways are expected to satisfy the needs for transportation of raw materials and containerized goods from the Central Asian subregion, and it is correct to expect that freight trains and container block trains will handle the long distance traffic.

At present there is no railway link between Central Asia and sea ports in the South.

Railway connection from Central Asia to sea ports are available only to the East. The Druzba-Urumqi-Lianyungang (Kazakhstan/China) railway line with a temporary schemes of operations, provides twice a week regular passenger train services from Almaty to Urumqi and back. Freight services are limited and restricted to Kazakhstan and western province of China only. The border-crossing of Druzba features also a railway break-of-gauge problem (1,520 mm in Kazakhstan and 1,435 mm in China). Absence of regular operational schemes of railway operations is due to present technical limitations of the line and border-crossing stations at Druzba and Alatan Shankow, as well as coordination problems in providing services between China and Kazakhstan railway authorities. In addition, application of higher tariffs on this line is diverting the traffic to much longer route via the Trans-Siberian line to the Russian sea ports of Nakhodka and Vostochni in the East.

However, an agreement between China and Kazakhstan railways has been signed on 4 June 1994, on railway operations along the whole railway line, and container train services of one 45 TEU container train a week could be practically available within a short period of time.

The volume of cargo traffic by rail between Kazakhstan and China reached 525,000 tons in 1994.

The railway line Druzba - Urumqi has the fixed timetable for passenger trains and provides twice a week round connection service between those two destinations.

The transit traffic of freight trains between Turkmenistan, Uzbekistan, and Russian Federation and China has started and is developing across the border at Druzba-Alatan Shankow.

As mentioned earlier in Scenario 2, by 1996-7, (when the missing railway link Tedzen-Seraks-Meshad will be established) Central Asia will have rail access to sea ports in the South, along the corridor Almaty-Tashkent-Seraks-Meshad-Tehran-port Bandar Emam and/or port Bandar Abbas. The main line will have the technical capacity to handle passenger and different categories of freight trains. Due to difference in railway gauges at Seraks station on both sides (Turkmenistan - 1,520 mm and Islamic Republic of Iran - 1,435 mm) an appropriate equipment (like in the case of Kazakhstan/China route) to change the wagon wheels/bogies will be installed, along with transloading equipment to facilitate border-crossing traffic.

It is envisaged that about 25 percent of the forecasted freight volume of the railway traffic may be container transport, with gradually increasing volume of box traffic from Central Asia to sea ports.

To achieve maximum benefits, container unit/block trains within the national railway network boundaries should have priority in operational schemes. Therefore average train speed and delivery time should be respectively higher, and lower at least by 20 per cent as compared with those of original freight trains, as maximum advantages are expected to be given to container movement using technical, organizational and managerial means. At international border-crossing points (in our case at Seraks and Druzba stations) an additional problem may arise, i.e. the use of rolling stock across the border. For technical arrangements to adjust the wagon wheels for rolling stock crossing the border (at break-of-gauge point) or transloading freight or containers at those stations, etc. sufficient infrastructure capacity must exist. The development of such facilities on both sides of a border is required to improve services and cut delivery time.

Assurances were given by the competent railway authorities in Turkmenistan and in the Islamic Republic of Iran that by the completion of this railway missing link between the two countries all the required facilities will be in place and operational.

Maximum utilization of the length of track sidings at the stations and terminals has to be given proper attention because it will determine the maximum number of wagons and containers in the train.

For a 30 bogie container flat car the minimum crossing loop length is 670 metres.

With the average load factor 2.5 container in a flat car, a 50 bogie car container train will carry 125 TEU or 75 TEU respectively for a 30 bogie car container train.

The railway operational schemes in the corridor to the South can only be practically formulated when the missing link between Turkmenistan and the Islamic Republic of Iran is accomplished, i.e. after 1996, and when the tariffs on the railway system are worked out and agreed upon. This exercise is already under way as far as the corridor to the East is concerned.

In general the anticipated operational schemes for railways will depend on the accomplishment and availability of the physical infrastructure with necessary technical capacities on one side, and on future traffic volume growth on the other. While the first is being secured, the traffic growth needs to be forecasted.

3.5.1 Traffic Forecast

Based on information received from railway authorities in CAR (Kazakhstan, Uzbekistan and Turkmenistan) the volume of traffic during first year of operation in the corridor (at Seraks station) to the South will be close to 1.5 million tons. This volume includes imports, exports and transit both ways.

The traffic forecast for the first ten years of operation has been developed in three variants: "optimistic", "pessimistic" and "medium", the latter representing the most likely forecast.

The "optimistic" forecast anticipates higher growth rates of traffic in the first few years, assuming the presence of the existing potential traffic volumes, diverted traffic from other modes, and new generated traffic. The traffic growth rate after year 2000 is assumed to be a constant growth of 5 per cent per annum.

The "pessimistic" forecast starts with 1 million tons of traffic in the first year of railway operation with a constant growth rate of two per cent per annum over the period of ten years.

The "medium" forecast follows the most likely traffic development behaviour. There are roughly three periods in the first ten years of operation of the railways. First 2-3 years, when the traffic will remain constant because of the transitional period and adaptation of the system to new capacity and operations. (For example, a provision of sufficient rolling stock is unknown). In the second five year period (1998-2002) traffic will presumably grow from 5 to 7.5% per annum as a result of the new generated and diverted traffic, as well as of the new railway system's ability to handle the traffic. In the years after 2002 a permanent growth rate of 3% per annum is anticipated.

The "medium" traffic forecast will be used in further analysis.

RAILWAY TRAFFIC FORECAST IN CORRIDOR TO THE SOUTH (Seraks Station)

YEAR		OPTIMISTIC		MEDIUM		PESSIMISTIC	
		000 t	Rate of growth %	000 t	Rate of growth %	000 t	Rate of growth %
1	1996	1500	8	1500	-	1000	2
2	1997	1620	8	1500	-	1020	2
3	1998	1750	9	1575	5	1040	2
4	1999	1890	9	1653	5.5	1080	2
5	2000	2000	5	1732	7.5	1102	2
6	2001	2100	5	1784	7.5	1124	2
7	2002	2205	5	1891	7.5	1146	2
8	2003	2315	5	2033	3	1169	2
9	2004	2431	5	2094	3	1192	2
10	2005	2553		2157		1221	

Container trains

If 10 % of the forecasted volume of traffic is containerized in 1996, 20% in year 2000, and 25% in year 2005, the volume of container traffic would be as follows:

Year	Medium traffic volume forecast (in 000 t)	Containerized volume (in 000 t)
1996	1500	150 (10%)
2000	1732	346 (20%)
2005	2157	539 (25%)

Under assumptions, that:

- gross load per TEU is 13.5 tonnes;
- 30 bogie vehicles can be accommodated in 1 container train;
- 2.5 containers in a wagon, in total 75 TEU per train;
- container train operations are provided 300 days in a year, (as an average working days in container business in a number of countries in the region); the anticipated volumes of container traffic are shown in the following table:

**CONTAINER TRAIN FORECAST IN
CORRIDOR TO THE SOUTH (SERAKS STATION)**

	1996	2000	2005
Containerized traffic volume in 000 tonnes	150	346	539
TEU	11,100	25,630	40,000
Container trains per year	148	342	533
Container trains per day	0.5	1	2

The number of container trains may be higher than the numbers indicated in the forecast due to usual imbalance of loaded and empty container traffic.

The future container traffic forecast is based on the presence in traffic of the commodity categories that can be containerized.

An indication could be volumes of major Central Asian commodities moved by rail in 1990, reflected in a following table:

Commodities	million tonnes		
	in	out	Total
1. Coal	12	9	21
2. Oil products	27	16	43
3. Ores	4	3	7
4. Iron of steel	5	2	7
5. Forestry products	10	-	10
6. Construction materials	48	55	103
7. Cement	7	6	13
8. Fertilizers	8	5	13
9. Grain products	11	3	14
10. Other	27	24	51
TOTAL	160	122	288

Source: The Euro-Asian Corridor: Strategic Issues in the Transport, Telecommunications and Energy Sector, Consultant's Report EBRD, July, 1993. page 34.

As can be seen from the table, the traffic was dominated by low value and bulk commodities. Of the total 288 million tons carried, only 51 or 18% was the "other" category, covering relatively high value processed manufactured and "general" cargo, including cotton. It should be noted that 60 per cent of traffic was inter-regional, with about 50 per cent for construction materials and almost 20 per cent for coal and oil products.

For the purpose of the railway container traffic forecast, special consideration is given to commodities that can be containerized in the future. There are items of higher value categories from commodity groups, such as: "other" including a number of manufactured goods. The penetration rate of containers will also depend on readiness of manufacturers and traders to use containers for transport of their products.

If the container traffic by the year 2000 constitutes 20% and in 2005 increases to 25 per cent from the "medium" traffic volume forecast, the number of container trains may reach 1 per day in year 2000 or 2 per day in year 2005.

Freight Trains

The forecasted non-containerized traffic will be handled by freight trains. The number of freight trains per year and per day are anticipated under the following assumptions:

1. Train length for non-container trains will be the same order of magnitude as container trains, i.e. 576 metres for the wagon portion;
2. Axle load 20 tonnes;
3. Typical length for bottom discharging bulk wagon is 15 m;
4. Number of wagons per train: $\frac{576}{15} = 38$;
5. From assumption (2) maximum mass per wagon is $(4 \times 20) = 80$ tons minus assumed 22 ton tare, i.e. payload is $(80-22) = 58$ tons.
6. Assumed 80 per cent of payload capacity can be utilized by the bulk commodities carried, i.e. $58 \times 0.8 = 46$ tons per wagon;
7. From (4) and (6), the train payload will be $38 \times 46 = 1748$ net tonnes.

If the loading balance is one way empty, the number of trains are doubled. Necessary corrections should be calculated on the base of real practices.

FREIGHT (NON CONTAINER) TRAIN FORECAST FOR CORRIDOR TO THE SOUTH

	1996	2000	2005
- Non-containerized traffic volume in 000 tonnes	1,350	1,385	1,618
- Freight trains per year	772	792	926
- Freight trains per day	2.6	2.6	3

Analysis shows that the forecasted cross-border volume of traffic in the year of 2000 can be handled by 1 container train and 2.6 freight trains, or in year 2005 by 2 container trains and 3 freight trains per day. If the loading balance is 60% loaded and 40% empty, the

number of trains per day will increase. In a year 2000 to 1.6 container trains and 4 freight trains; or in a year 2005 to 3 container trains and 5 freight trains.

Technical facilities at Seraks station (please see Scenario 2 above) can easily accommodate the above forecasted number of trains.

3.5.2 Rail, Rail-cum-Road Routes

Present position

In the absence of rail infrastructure to provide direct freight transport services from CAR to sea ports in the South, the existing transport flows move along the combined rail-cum-road-cum-rail routes, using the advantages of both rail and road transport services. Direct road transport services are also in practice.

The existing combined rail and road routes from Central Asia to sea ports in the **South**, are the following;

1 To Pakistan

a) TURKMENISTAN - Kushka - AFGHANISTAN - Chamam - Karachi PAKISTAN
 Rail ----- Road ----- Rail

b) TURKMENISTAN - Ashgabat - IRAN - Zahedan - Karachi PAKISTAN
 Rail ----- Road ----- Rail

c) UZBEKISTAN - Termez - AFGHANISTAN - Peshawar - Karachi PAKISTAN
 Rail ----- Road ----- Rail

d) KAZAKHSTAN - Kunjerab PAKISTAN - Rawalpindi - Karachi PAKISTAN
KYRGYZSTAN
CHINA
 Road ----- Rail

2. To Islamic Republic of Iran

a) TURKMENISTAN- Ashgabat - Meshad/Gorgan - Bandar Emam Islamic Rep. of IRAN
 Rail ----- Road ----- Rail

b) TURKMENISTAN - Ashgabat - Meshad/Gorgan - Sirjan - Tezerj - Bandar Abbas
 Rail ----- Road ----- Rail ----- Road

base of shipments to and from CAR to Pakistan via Islamic Republic of Iran using road or rail-cum-road transport services.^{*/}

^{*/} Beshir Ahmed and Co. (Reg.). Relates based on 1 x 20 foot container, weight up to 10 metric tons or up to 30 cubic meters.

Related costs of rail and rail-cum-road transport services on the above-listed mentioned routes differ from case to case due to frequent changes in rates and prices of transport services. Based on information received related cost estimates are made on the

For road transport services estimated freight charges to and from Karachi port and destinations in Central Asia are the following:

Country/City	Freight charges in US\$	Distance km	Cost per	
	per TEU		TEU km	ntkm
TURKMENISTAN, Ashgabat	2,050 2,800	2,690 3,999	0.762 0.700	0.056 0.052
UZBEKISTAN, Tashkent	2,900	4,988	0.584	0.043
KAZAKHSTAN, Almaty	3,350	4,708	0.711	0.052
TAJIKISTAN, Dushanbe				

For rail freight rates Pakistan railways are using from Karachi to Kohitaftan (Iranian border, a distance of 1,378 km) the following rates per one ton in US\$: rice 38.56; cotton yarn 48.33; textiles 48.33; leather 40.00; wheat 52.16; cooking oil 47.60; tea 46.00; cotton thread 47.80.

For the study an average of US\$ 48 per ton could be used, as based on figures relating to major commodities transported.

For the purpose of comparison the estimated railway cost per TEU km is US\$ 0.47, or US\$ 0.0348 per ntkm.

Existing railway routes from Central Asia to sea ports in the East are from Kazakhstan via Druzba-Urumqi line to sea ports in China, or via Trans-Siberian line to Nakhodka sea port in the Russian Federation.

On the base of present charges for transport services in China, a 20 foot container road charge is US\$ 0.7 per km (TEU = US\$ 0.7 per km), or US\$ 0.052 per ntkm.

China Railways are charging US\$ 1,000 for shipment of a 20 foot container from the port of Lianyungang to Alatan Shankow (4.134 km), making a railway transport cost of a TEU = US\$ 0.24 per km or US\$ 0.018 per ntkm, which reflects transport costs only.

3.5.3 Transportation of containers

In principle, much of the future freight traffic which could be generated in and outside Central Asia is likely to be container traffic. This applies to all corridors.

Route to the sea ports in the East is in fact the Druzba-Alatan Shankow-Lianyungang railway line in China.

Alatan Shankow-Druzba stations already have limited container handling facilities which make container handling at limited volumes possible. Arrangements between Kazakhstan and China railway authorities are under way for better utilization of existing capacities for container train transport and also foreign assistance is being used to improve and speed-up handling of containers.

With the above improvements an increased number of container trains, towards Central Asia and in transit via Central Asia to Islamic Republic of Iran/Europe, as well as to the Russian Federation/Europe is expected in the near future.

The railway route from Druzba via Almaty-Tashkent-Parahat-Seraks to Meshad (Islamic Republic of Iran) have another break-of-gauge point (1,520/1,435 mm) at the Seraks station (at present under construction) and the equipment being installed will provide for efficient handling of container movement, as well as of the break-of-gauge problem.

Container train operations on the railway line Lianyungang-Druzba-Central Asia are possible but are not yet widely practiced. At present containers are not passing through the Alatan Shankow station. The capacities and technical conditions on the Lianyungang-Alatan Shankow line allow one container train to pass everyday. The Lianyungang port is intensively developing its container handling and inter-modal facilities. The Sinatrans Lianyungang company has recently established several container terminals to develop door-to-door services in order to intensify container use on the main railway line. Lianyungang is expected to be a Far Eastern Terminal of the cross-continent landbridge to link Europe with the Far East.

Container traffic charges on this line will inevitably be set to compete with linear shipping by sea and with the northern railway (Trans-Siberian) route.

To promote, develop and operate rail container transport services, assurances have been given from countries involved to provide access to sea ports South and East, that 20 foot ISO containers are accepted as standard containers all along the main railway corridors, and technical capacities of the railways will allow to facilitate that movement.

Container traffic in the former USSR was well developed, also in the Republics. A network of container terminals was set up and maintained by railways. The whole infrastructure was oriented to handle ISO 20 foot and non-ISO domestic containers of varying dimensions. It reportedly continues to work that way.

Following is the number of container terminals in CAR:

Kazakhstan	3
Kyrgyzstan	6
Tajikistan	1
Turkmenistan	3
Uzbekistan	11

Detailed information about these terminals is provided in Annex VI

At present, except for the two terminals in Kyrgyzstan, all are used mainly by railways who owns and operates them. In fact, there is little evidence of any long haulage container movement by road in the past. The situation will change with the emergence of new

connections in the eastern and southern corridors, however, more visible movement of containers by road is yet to develop.

Access from CAR to sea ports in the South is provided by combined rail-cum-road or road transport only.

From Iranian ports limited number of 20 and 40 foot containers are crossing the Turkmenistan border by road at Gudriolum, Loftabad and Seraks. Twenty foot containers are being transported by road from Karachi port to Afghanistan (or rail-cum-road: Karachi-Peshawar by rail, and from Peshawar onwards to Afghanistan by road) and to Uzbekistan (Karachi-Tashkent by road).

Container movement by road has recently shown a slightly increasing trend by carrying, in general, to CAR consumer goods and cotton in return. ISO Containers are moving mainly from the United Arab Emirates and Turkey, transiting Iran to Turkmenistan, Uzbekistan, Kazakhstan, Armenia and Azerbaijan. Containerized goods to CAR are: medicines, tea (from India), electronics, tyres, vegetable oil, cigarettes, powdersoup (from Dubai and Singapore to Afghanistan and Turkmenistan), frozen chicken and soft drinks (from Turkey) etc. Non-ISO standard containers are also in use.

The cost of 40 foot container round trip by road from Bandar Abbas port to Ashgabat is US\$ 2,555, to Tashkent US\$ 3,250-3,500. Cost of a non-ISO container, one way, is US\$ 800-1,000. In some cases however container owners are reportedly reluctant to use ISO containers, so they buy non-ISO standard containers and use them one way only. This is a frequent case due to unsafe return and damages of containers.

The fact that within the CAR national railway networks, the ISO and non-ISO containers of different size were and still are in use, means that for international container transport, along the corridors to the South and the East, the whole infrastructure needs to be re-oriented.

The positive fact is that, as stated before, assurances from countries along the East and South corridors have been given that ISO 20 foot standard containers are accepted, and the railway technical standards will make international container transport feasible and efficient.

The whole container transport issue is an area for further detailed studies to fully develop the system.

In general, the containerization scene in Central Asia may be described as follows:

Railways have been mainly involved in the carriage of containers. They are maintaining a number of container terminals at different locations. The condition of handling equipment is not well known.

The existing infrastructure is oriented to handle ISO 20 foot and non-ISO domestic containers.

For future international railway container transport only 20 foot containers are commonly accepted. Limited movement of 40 foot units is also possible on a member of railway sections.

The railway link between Kazakhstan and China can handle 160 TEU in 24 hours at Druzba station .

Natural conditions at Druzba station are difficult and at present affect handling of containers. Plans have been drawn to construct a closed terminal and negotiations are underway to use foreign technical assistance.

There is no regular container traffic between China and Kazakhstan, however, an Agreement has been signed between Kazakhstan and China authorities on June 4th 1994, regarding the regular railway operations including container movement between two countries.

The future railway border-crossing station between Turkmenistan and Islamic Republic of Iran at Seraks will have adequate infrastructure to handle containers. The railway link completion is targeted by 1996.

The role of roads in carriage of containers has been limited in the past. This, however, is changing and some container movement is taking place.

4. COMPARISON OF LAND TRANSPORT ROUTES TO SEA PORTS IN THE SOUTH AND THE EAST

In general, criteria for routes comparison include: distance, costs and time of handling at point of origin (loading the transport unit), direct transport cost (by one or more modes of transport), border-crossing or change of transport mode, costs and time (transloading, handling, bogie change, custom inspection time and/or charges, etc.) and finally port handling charges, unloading or discharging at the sea port destination.

For comprehensive analysis the information on costs and time elements should be as detailed as possible. Unfortunately such information was not available. Therefore, the analysis is limited to distance, time, and partly to cost comparison for direct transport services only.

4.1 Routes to sea ports in the Islamic Republic of Iran and Pakistan

Land transport services for Central Asia, in the corridor to the South, are provided at present to and from ports: Bandar Emam, Bandar Abbas, Chah Bahar (Islamic Republic of Iran) and Karachi (Pakistan). While road and road-cum-rail land transport services are rendered from the Iranian ports directly to Turkmenistan, from the port of Karachi (Pakistan) such services are provided only via the Islamic Republic of Iran, Afghanistan or China.

The routes as identified in the previous chapter are:

From the Islamic Republic of Iran:

A. Rail-cum-road, road-cum-rail-cum-road transport:

- From the Port of Bandar Emam Khomeini via Tehran to Gorgan and Meshad by rail and onwards to border-crossings with Turkmenistan by road transport.
2. From the Port of Bandar Abbas to Tezerj by road and onwards via Tehran to Meshad by rail, and then by road transport to border-crossings with Turkmenistan.

However, by end of 1996 the Tedzen-Seraks-Meshad and Tezerj-Bandar Abbas (opened in 1995) new railway lines will provide direct railway services from the port of Bandar Abbas to Central Asia.

B. Road transport:

Port of Bandar Abbas-Sirjan-Kerman-Gonabad-(or Yazd-Tabas)-Meshad and via four border-crossing points to Turkmenistan (see distances in table attached).

**ROAD DISTANCES BETWEEN BORDER-CROSSINGS POINTS WITH
TURKMENISTAN AND SEA PORTS OF BANDAR ABBAS AND Chah Bahar IN THE
ISLAMIC REPUBLIC OF IRAN**

1.	Loftabad-Meshad-Zahedan-Chah Bahar	1,925 km
2.	Badjigiran-Meshad-Zahedan-Chah Bahar	1,858 km
3.	Seraks-Meshad-Zahedan-Chah Bahar	1,832 km
4.	Loftabad-Meshad-Gonabad-Ravar-Kerman-Sirjan-Bandar Abbas	1,562 km
5.	Badjigiran-Meshad-Gonabad-Ravar-Kerman-Sirjan-Bandar Abbas	1,495 km
6.	Seraks-Meshad-Gonabad-Ravar-Kerman-Sirjan Bandar Abbas	1,469 km
7.	Loftabad-Meshad-Tabas-Yazd-Anar-Sirjan Bandar Abbas	1,938 km
8.	Badjigiran-Meshad-Tabas-Yazd-Anar-Sirjan Bandar Abbas	1,871 km
9.	Seraks-Meshad-Tabas-Yazd-Anar-Sirjan Bandar Abbas	1,845 km
10.	Incheborum-Minudasht-Meshad-Zahedan-Chah Bahar	2,190 km
11.	Incheborum-Azadshahr-Shahrood-Tehran-Anar-Bandar Abbas	1,910 km

From the Bandar Abbas port the road distances, via the Islamic Republic of Iran, to destinations in Central Asia are:

Ashgabat (Turkmenistan)	1,695 km
Tashkent (Uzbekistan)	3,004 km
Almaty (Kazakhstan)	3,993 km
Bishkek (Kyrgyzstan)	3,713 km

II. From Pakistan

A. Rail-cum-road transport:

1. From Karachi port (via the Islamic Republic of Iran) to Quetta-Kohitaftan-Zahedan by rail, onwards by road to Meshad and via border-crossings to Turkmenistan, further by road or rail transport to destinations in Central Asia.
2. From Karachi to Chaman by rail then (via Afghanistan) Kandahar-Herat-Kushka by road to Turkmenistan or by rail to Peshawar, and then by road from Kabul to Termez (Uzbekistan).
3. From Karachi to Rawalpindi by rail then via Karakoram Highway to China and Almaty (Kazakhstan) by road and onwards to a final destination in Central Asia by road or rail transport.

B. Direct road transport services from Central Asia to the sea ports in the South are provided by the following shortest routes:

1. From Ashgabat (Turkmenistan) to ports in Islamic Republic of Iran, via Badjigiran- Meshad-Gonabad-Ravar-Kerman-Sirjan to Bandar Abbas (1,535 km) and Chah Bahar (1,858 km);
2. From Tashkent (Uzbekistan) to Karachi port in Pakistan via Kabul-Kandahar (Afghanistan), total distance 2,812 km;
3. From Almaty (Kazakhstan) to Karachi port in Pakistan, via Karakoram Highway (China) 3,708 km, or via Kabul-Kandahar (Afghanistan) 3,800 km.

4. From Bishkek (Kyrgyzstan) to Karachi port in Pakistan via Karakoram Highway (China) 3,434 km, or via Kushka (Turkmenistan)-Herat- Kandahar (Afghanistan)-Chaman-Quetta-Karachi 3,655 km.

Road distances from the port of Karachi (Pakistan) to major destinations in Central Asia are reflected in the table below:

From/To	Distance (Km)
<u>Via Afghanistan</u>	
1. Karachi-Quetta-Chaman-Kandahar-Herat to	1,658
- Kushka (Turkmenistan)	2,316
- Ashgabat (Turkmenistan)	2,946
- Tashkent (Uzbekistan)	3,655
- Bishkek (Kyrgyzstan)	3,935
- Almaty (Kazakhstan)	
2. Karachi-Quetta-Chaman-Kandahar-Kabul to	1,968
- Termez (Uzbekistan)	2,812
- Tashkent (Uzbekistan)	3,800
- Almaty (Kazakhstan)	
3. Karachi-Peshawar-Jalalabad-Kabul to	2,318
- Termez (Uzbekistan)	3,162
- Tashkent (Uzbekistan)	3,871
- Bishkek (Kyrgyzstan)	4,151
- Almaty (Kazakhstan)	
<u>Via China</u>	
4. Karachi-Lahore-Rawalpindi-Hassanabdal-Gilgit-Kunjerab-Kashgar-Torogart to	3,434
- Bishkek (Kyrgyzstan)	3,708
- Almaty (Kazakhstan)	3,770
- Dushanbe (Tajikistan)	
<u>Via Islamic Republic of Iran</u>	
5. Karachi-Quetta-Kohitaftan-Zahedan-Badjigiran to	2,690
- Ashgabat (Turkmenistan)	3,999
- Tashkent (Uzbekistan)	4,988
- Almaty (Kazakhstan)	4,708
- Bishkek (Kyrgyzstan)	

From Turkmenistan and Uzbekistan, the most promising road transport links to the sea port in the South are via Afghanistan and Islamic Republic of Iran to Karachi port. Road transport operators are very much in favour of the Karachi-Chaman-Kushka route via Afghanistan as the best and shortest, but due to the present situation in Afghanistan this route is not in use.

From Kazakhstan, Kyrgyzstan and Tajikistan the shorter road links to Karachi are via China, along the Karakoram Highway.

Major transport flows from Central Asia follow nowadays the routes from Turkmenistan to the ports of Bandar Abbas and Chah Bahar in the Islamic Republic of Iran or via the Islamic Republic of Iran to the port of Karachi in Pakistan. The latter however involves longer distances than via Afghanistan. Once the situation is normalized land transport routes through Afghanistan will likely provide more attractive options.

Rail-cum-road-cum-rail transport services take place on routes: Karachi-Kohitaftan-Zahedan (by Pakistan railways)-Zahedan-Badjigiran-Ashgabat (by road; Islamic Republic of Iran)-Ashgabat-Tashkent (by railways). The total transport time from Karachi to Tashkent is reportedly 42 days. The average Karachi-Zahedan railway transit time is about 10 days. Over a distance of 1,435 km between Karachi and Zahedan the average speed of railway transport at present is 5.9 km per hour.

Pakistan railways freight rates from Karachi to Kohitaftan, equals on average to US\$ 48 per one ton of freight. Railway services are direct from Karachi to Zahedan railway station in the Islamic Republic of Iran. Rail freight in Pakistan is prepaid only to Kohitaftan, while for the section Kohitaftan-Zahedan payment is done in Iranian currency in Zahedan.

Average travel time by road of a truck and trailer carrying a container in the Islamic Republic of Iran over a distance of 1,800 km is five days, which gives an average speed figure 15 km per hour.

The distance, time, and cost figures by routes are as follows:

Karachi-Zahedan: 1,435 km by rail, transit time 10 days, cost US\$ 48 per ton, or US\$ 0.0348 per ntkm.

Zahedan-Ashgabat: 1,255 km by road, transit time 4 days, cost US\$ 0.056 per ntkm.

Ashgabat-Tashkent: 1,309 km by rail, transit time 5 days.

From the total delivery time of 42 days the transport transit time accounts for 19 days (or 45 per cent) the remaining 23 days (55 per cent) make the handling, change of transport mode and waiting time, thus indicating a tremendous potential to improve the services.

Road transport services at present prove shorter delivery time over the same distance such as: from ports in the Islamic Republic of Iran to Ashgabat in 5 days; to Tashkent in 8 days: from Karachi to Tashkent the shortest road transport delivery time is also 8 days. These days transport operators make their selections of routes on security and safety of load and crews rather than distance or costs. The routes are from Karachi via the Islamic Republic of Iran, and from Iranian ports to Turkmenistan and onwards for Central Asian destinations, or from the Iranian ports to Turkmenistan and similarly onwards.

On the cost base the railway transport services are cheaper (US\$ 0.0348 per ntkm compared with US\$ 0.043 per ntkm for road transport) but the selection of modes and routes used to depend on quantities, kind of commodities and reliability of delivery.

The road transport options to sea ports in the Islamic Republic of Iran and Pakistan are as follows:

From Turkmenistan (Ashgabat) to:

1. Bandar Abbas port	1,839 km
2. Chah Bahar port	1,898 km
3. Karachi port:	
a) via Afghanistan	2,316 km
b) via Islamic Republic of Iran	2,690 km

From Uzbekistan (Tashkent) to:

1. Karachi port	
a) via Chaman-Kabul (Afghanistan)	2,812 km
b) via Chaman-Herat (Afghanistan)	2,946 km
2. Bandar Abbas port	3,000 km
3. Chah Bahar port	3,232 km
4. Karachi via Islamic Republic of Iran	3,999 km

From Kazakhstan (Almaty) to:

Karachi port	
a) via Karakoram Highway	3,708 km
b) via Afghanistan	3,800 km
2. Bandar Abbas port	3,993 km
3. Chah Bahar port	4,100 km
4. Karachi port via Islamic Republic of Iran	4,988 km

The delivery time by road is usually in close relation with distances, and the shortest reported to reach the ports is 5 days from Ashgabat to the ports in the Islamic Republic of Iran, 6 days to Karachi port via Afghanistan, and 7 days to Karachi port via the Islamic Republic of Iran. Road links from Karachi via Karakoram highway are giving the transport option north-east to Kyrgyzstan, Tajikistan, Uzbekistan, Kazakhstan and western China.

From Karachi to:

	<u>Distance</u>
Urumqi (Xinjiang, west China province)	4,292 km
Bishkek (Kyrgyzstan)	3,434 km
	- via Haryn
	- via Osh
Almaty (Kazakhstan)	3,690 km
Dushanbe (Tajikistan)	3,708 km
Tashkent (Uzbekistan)	3,770 km
	3,610 km

The difference in distance using the two routes is the following:

From Karachi to:	via Islamic Republic of Iran	via Karakoram Highway	Difference in distance km
- Tashkent (Uzbekistan)	3,999	3,610	389
- Almaty (Kazakhstan)	4,988	3,708	1,280
- Bishkek (Kyrgyzstan)	4,708	3,434	1,274
- Dushanbe (Tajikistan)	5,075	3,770	1,305

The Karakoram Highway route is shorter, however due to difficult road conditions, particularly in winter, the traffic movement on this route has serious limitations. It is the only road connection from Karachi port to Xinjiang in western province of China.

At present, the existing land transport infrastructure has limitation to be fully utilized.

Although shorter routes exist, due to the present situation in the subregion, transport moves in some cases along longer less economic routes.

4.2 Railway routes to sea ports in Islamic Republic of Iran, Pakistan or China

CAR at present can use combined rail-cum-road transport and/or road transport to the sea ports in the South, however access to sea ports in the East is possible only by rail transport (refer to map enclosed). Long distances and inadequate road infrastructure in the eastern corridor to ports in China gives the dominant position to railways. Since 1992, when the first train crossed the China-Kazakhstan break-of-gauge points at Alatan Shankow-Druzba stations rail transport facilities are provided to move passengers and freight including container transport. Improvement of this line is in progress.

As indicated earlier, new railway options from CAR to sea ports both in the East and South are expected after 1996, when the missing link Tedzen-Seraks (Turkmenistan)-Meshad (Islamic Republic of Iran) is eliminated, and after the completion of missing link to Bandar Abbas port (sections Tezerj-Bandar Abbas) as well as later, when the national railway network in the Islamic Republic of Iran provides an access to the port of Bandar Abbas via a new railway line from (Meshad) Fariman to Bafq. The construction of the new 540 km long railway link in the Islamic Republic of Iran between Kerman and Zahedan will connect the existing rail networks of Islamic Republic of Iran and Pakistan thus providing direct railway transport services to Karachi port. (see new railway constructions envisaged in scenario 3).

When the construction of the (Meshad) Feriman-Bafq new railway line is completed in Islamic Republic of Iran after year 2000 there will be another shorter railway option for Central Asian traffic.

From Almaty the options may be:

A. <u>To the South</u>	Almaty-Parahat-Feriman (Meshad):	2,225 km
	(a) Feriman-Tehran-Bandar Emam	1,802 km
	(b) Feriman-Bafq (to be built)	720 km
	Bafq- <u>Bandar Abbas</u>	630 km

The distances are:

1. Almaty-Bandar Emam: 4,027 km
2. Almaty-Bandar Abbas: 3,575 km

With the completion of the missing railway link on the Iranian railway network between Kerman and Zahedan railway access from and to Central Asia, Turkey and Europe is established along the South Asian railway corridor to Karachi and Qasim ports in Pakistan.

B. To the East

Almaty-Druzba-Lianyungang (China) 4,995 km

There is however another potential railway link between Central Asia and Pakistan via Afghanistan, which is a proposed new 800 km line in Afghanistan between Kushka (Turkmenistan) and Chaman (Pakistan) via Kandahar. With this railway link CAR would have a railway access to the sea ports of Karachi and Qasim. The distance from Karachi port to Tashkent and Almaty by the new railway link would be about 2,930 and 3,720 km respectively.

Both railway options (to the South and to the East) have a break-of-gauge problem and in comparative analysis for options the time required and cost for the operations at a break-of-gauge point should be taken into consideration.

The actual distance of railway connections as well as the estimated transit, transshipment and total time for railway transport operations are shown in the table:

To	Distance (km)	Total transport time (h)
- Bandar Emam	3,504	106
- Bandar Abbas (via Tehran)	4,122	123
via Fariman-Bafq	3,052	93
(to be constructed at a later stage)		
- Lianyungang Port (China)	5,508	163

The estimated times for efficient services on the railway line, (to the South and to the East) are:

- a) For transit time:
 - maximum permissible freight or container train speed 80
 - average speed 35 km/h
- b) For transshipment:
 - transshipment of containers and bogie flat cars total 4 hours per train,
 - for train preparations at border, 2 hours,
 - total time at border station 6 hours.
- c) Total railway transport time $T = a+b$

Based on the above distance and time estimates access from southern Kazakhstan, Uzbekistan and Turkmenistan to sea ports in the South appears to be more favourable than to the East.

From Almaty the distances and time involved are more competitive for options to the sea ports in the South or in the East.

From Almaty to Bandar Abbas port (Islamic Republic of Iran) the distance, via Tehran, is 4,645 km and total railway transport time takes 139 hours. The option to the sea port of Lianyungang (China) is 4,995 km and total time 148 hours. The difference in both distance and time is not significant. If unified railway tariffs are applied along the whole railway corridor, traffic from Almaty to sea ports in the East or in the South will be attracted by different quality of services and port charges. For more detail figures see data in tables 3.3 and 3.4.

Due to lack of information on railway transport costs and tariffs in the transport corridors the cost comparison of options was not feasible. However, China railways informed that on the Lianyungang-Alatan Shankow railway line the scheduled container trains would travel the distance of 4,134 km in 168 hours (7 days) at a cost of US\$ 0.24 for TEU/km, or US\$ 0.018 per ntkm.

TABLE 3.3 CENTRAL ASIAN REPUBLICS ACCESS TO SEA PORTS - SOUTH

ROAD TRANSPORT

From/To	Distance (km)	Delivery Time* (days)	Cost* (US\$) TEU/km	ntkm
TURKMENISTAN (Ashgabat)				
- Bandar Abbas Port	1,830	5		
- Chah Bahar Port	1,898	5		
- Karachi Port				
a) via Islamic Republic of Iran	2,690	7	0.762	0.056
b) via Afghanistan	2,316	6		
UZBEKISTAN (TASHKENT)				
- Bandar Abbas Port	3,000	8		
- Chah bahar Port	3,232	9		
- Karachi Port				
a) via Afghanistan (Chaman-Herat)	2,946	8		
b) via Afghanistan (Peshawar-Kabul)	3,162	9		
c) via Afghanistan (Chaman-Kabul)	2,812	8		
d) via Islamic Republic of Iran (Quetta-Zahedan)	3,999	11	0.700	0.052
KAZAKHSTAN (ALMATY)				
Bandar Abbas Port	3,993			
- Chah Bahar Port	4,100			
- Karachi Port				
a) via Afghanistan (Chaman-Kabul)	3,800	11		
b) via China (Karakoram Hwy)	3,708	11		
c) via Islamic Republic of Iran (Quetta-Zahedan)	4,988	12	0.581	0.043
CHINA:			0.70	0.052

Time and cost include transport only

Assumption:

1. Commercial speed of road transport (1,800 km in 5 days) = 15 km per hour in Islamic Republic of Iran.¹

** Source: Metra Consulting Eng., June 1994, Islamic Republic of Iran.

TABLE 3.4 CENTRAL ASIAN REPUBLICS ACCESS TO SEA PORTS**RAILWAY TRANSPORT****Distance, Time and Cost elements**

			Distance in Km	Transit	Time (in hrs) Transhipment	Total Time	Cost(US\$) TEU/Km	ntkm
TURKMENISTAN (SERAKS)								
T 1	Islamic Rep. of Iran	- Bandar Emam Port - Bandar Abbas Port	1,980	57	6	63		
T 2		a) via Tehran	2,552	73	6	79		
T 3		b) via Fariman-Bafq	1,513	43	6	49		
	China	- Lianyungang Port	7,032	200	6	206		
UZBEKISTAN (TASHKENT)								
U 1	Iran	- Bandar Emam Port - Bandar Abbas Port	3,504	100	6	106		
U 2		a) via Tehran	4,122	117	6	123		
U 3		b) via Fariman-Bafq	3,052	87	6	93		
U 4	China	- Lianyungang Port	5,508	157	6	163		
KAZAKHSTAN (ALMATY)								
K 1	Iran	- Bandar Emam Port - Bandar Abbas Port	4,027	115	6	121		
K 2		a) via Tehran	4,645	133	6	139		
K 3		b) via Fariman-Bafq *	3,575	102	6	108		
K 4	China	- Lianyungang Port	4,995	142	6	148		
K 5		a) Lianyungang-Alatan Shankow	4,134	118	6	124		
K 6		b) Druzba-Almaty	861	24	6	30		
	Pakistan:	Karachi - Kohitaftan	1,378	39	6	45	0.47	0.0348
	China: **	Lianyungang - Alatan Shankow	4,134	168	6	174	0.24	0.018

To be built by year 2000

** Present data

Assumptions (freight traffic):

1. Maximum permissible track speed 80 km/hr
2. Schedule speed (average speed and allowance for safe-working and other stopping time) = 35 km/hr
3. Transhipment of containers at border(s) by gantry crane (average 2 rail per container and 125 TEU per train of 50 bogie flat cars, total 4 hours per train)
4. Train at border for customs procedures etc. Train preparation/breaks testing = 2 hours (The total time at border station = 6 hours)

4.3 General remarks

(a) Access from Central Asian Republics to sea ports in the South is possible at present by road and combined road-cum-rail transport services. Direct railway services will be available to Bandar Abbas and Bandar Emam ports after completion of the railway missing links (Tedzen-Seraks-Meshad and Tezerj-Bandar Abbas) in 1996.

(b) The distance and time delivery criteria indicate the following best options to sea ports in the South and in the East:

Road Transport Services

From Turkmenistan (Ashgabat) to ports of Bandar Abbas, (1,830 km, 5 days and Chah Bahar, (1898 km, 5 days) in Islamic Republic of Iran.

From Uzbekistan (Tashkent) to ports in Islamic Republic of Iran Bandar Abbas (3,000 km, 8 days), Chah Bahar (3,232 km, 9 days) and to port Karachi (Pakistan) via Afghanistan (Herat 2,946 km, 8 days), (Kabul 2,812 km, 9 days).

From Kazakhstan (Almaty) to Karachi port via China (Karakoram Highway) 3,708 km 11 days.

Rail-cum-road-cum-rail services are available from Karachi port via Islamic Republic of Iran to Tashkent (Uzbekistan). The total distance of around 4,000 km is shared by rail (2,744 km) and road (1,255 km) transport. From the total delivery time of 42 days less than a half is for direct transportation and the rest (55%) is spent for transloading, change of transport mode and waiting.

(c) Railway services from CAR to the sea ports in the East via Druzba (Kazakhstan) Alatan Shankow (China) to port of Lianyungang at present take 7 days for container train services over a distance of 4,134 km at a cost of US\$ 1,000 per TEU.

After the completion of the missing railway link Tedzen-Seraks-Meshad, options to use access to sea ports east or south from, say, Almaty (Kazakhstan) will depend on other than distance factors. If trade arrangements dictate the flow of commodities to destinations, east or south, transport of cargo will follow the available routes, but other things being equal, and if railway tariffs are unified, options for sea ports east or south will depend on factors like quality of services, port charges and reliability of delivery.

(d) Transport flows between CAR and sea ports in the South at present follow the safe and reliable routes even if there is a shorter but unsafe route available. However when the situation in Afghanistan is normalized, better use of existing road transport infrastructure can be expected.

(e) Overall rough estimation must be followed by thorough economic analysis to compare total costs and benefits of options.

Traffic forecast is one of the key issues for economic and financial justification of investment in land transport infrastructure and future transport operations. Traffic forecast from CAR in the corridors (South and East) does not exist, and reliable data for such exercise can not be provided. There is therefore a need to develop a data base for traffic volume forecast by identified routes to and from the sea ports.

As a result of the above-listed major expected developments to take place by around the year 2000 (subject to timely completion of the construction activities) the operational patterns of land transports are also expected to change substantially.

In the first place there will be a necessity to revise the transport operations along the traditionally used existing routes and take decisions as to whether there have been new opportunities and options created which could make movement of cargo traffic faster and cheaper.

There will be obviously necessary to break some traditional barriers and habits of using the previous routes which, by the time, have been considered working well.

It needs to be kept in mind that in some cases transport of goods has been taking place no matter at what operational cost since the profit margin, due to a huge demand for certain commodities, would balance the losses due to long journeys, time wasted for negotiating the borders, etc..

As it has been already mentioned, marketing of new available railway services would play one of the key roles in the process of picking up and using new routes: railways as well as roads.

The development of transport operations along the new routes is hard to predict at this stage, as reliable figures and predictive indicators on the increase of productivity of the particular sectors of the CAR economies will presumably not be available in a nearest future.

It is expected that they will be available in a few years, when (again presumably) national economies will take off and their industries will growingly demand for transport services.

The modal split between those two modes of transport is even more difficult to predict, for the same reasons. There is however a possibility that road transport, benefiting from improvement of roads or shortening the routes, may remain highly competitive on the land transportation scene for some time, particularly for a shorter distances, servicing border area trade, providing feeder services to railways and so on. Another factor is that there are at present 16 active road and 4 rail border-crossings between CAR and neighbouring countries, which makes the ratio 4:1 in favour of roads. It means that road freight/passenger traffic can move across the borders in many places and will likely continue to do so in the future. There will be presumably still extra capacity of the road network to accommodate growing domestic and international traffic. The standards of major trunk roads will however need to be upgraded to enable road pavements to carry increased axle loads as presently used in international traffic.

The roads which are identified as major linkages in each country from Central Asia to seaports in the South and East need to be brought to an appropriate standard in line with the standards set for the Asian Highway network.

The roads in Islamic Republic of Iran, which are being increasingly used for movement of freight to and from Central Asia to the sea ports in the South, are generally well maintained and have standard which is in upper range of the Asian Highway standards.

Improving road pavements from being able to carry about 6 tons per axle to 11 tons per axle loads (which is a very costly exercise) will by the year 2000 most likely become an issue when discussing the development of international freight transport by road.

Next what are the chances of the cargo containerization by around the year 2000. According to the findings of the study most of the railway infrastructure and its improvements has been designed to carry mainly 20' containers. Do the 40' containers and "high-cube" have the real chance to be also transported in a future?

A strategic development of inland container terminals (ICT) will also need to be considered jointly by CAR, China, Islamic Republic of Iran, and Pakistan.

Here we come to another issue which is rail-cum-road transport, and how and to what extent these two transports are going to compliment each other.

In this connection multimodal transport techniques and procedures need to be gradually introduced along the major land transport corridors to help tackling effectively the transport operations.

It needs also to be mentioned that parallel developing the accompanying routeside infrastructure (restplaces, motels, gas/service stations, customs houses, etc.) has, particularly for road transport, great importance for the overall development of both freight and passenger traffic.

Another question is how much of the available services and routes' capacity would be used by domestic, bilateral, and international road/rail transit traffic. For the development of two latter types of traffic the facilitation of transport will play a very important role.

5. LAND TRANSPORT BORDER-CROSSING FACILITATION

5.1 Traffic Facilitation in ECO Region

ECO region comprises ten countries¹ seven of which are land-locked.

Development of transport has rightly been identified as the priority sector by ECO member countries which are laying equal stress on the need for adoption of comprehensive facilitation measures to enable smooth movement of traffic, in accordance with internationally accepted standards. The outline Plan for the Development of Transport Sector in the ECO region² and its long-term perspective include following in its objectives:

- a) Conclusion of bilateral and multilateral agreements within or beyond the region to facilitate transportation and access through new borders.
- b) Development of multilateral convention on transit regulations and create a common system of customs procedures in the region in accordance with international laws and conventions.
- c) Creation of regulatory framework for multi-modal transport in the region.

Before the analysis of the traffic facilitation problems in the region, it would be useful for a proper appreciation to take a look at the status of existing land routes in the ECO region.

Railways: The region can be divided into three sub-regions on the basis of their railway systems:

Central Asia with 1,520 mm gauge;
Turkey-Islamic Republic of Iran
with 1,435 mm gauge;
Pakistan with 1,676 mm gauge;

The above three sub-regions are not inter-connected at present. A project to link Central Asia with Iran is under implementation. The Outline Plan for the Development of Transport Sector in the ECO region stipulates the interconnection of railway networks of ECO member countries.

¹ ECO members are: Afghanistan, Azerbaijan, Islamic Republic of Iran, Kazakhstan, Kyrgyzstan, Pakistan, Tajikistan, Turkey, Turkmenistan and Uzbekistan. Turkey is not a member of ESCAP, but ECE.

² "Outline Plan for the Development of Transport Sector in the ECO Region" adopted by the Transport Ministers of the ECO member countries on 25-27 October 1993 in Almaty, Kazakhstan.

Turkmenistan and the Islamic Republic of Iran signed a memorandum to confirm establishment of railway connection for handling external trade and transit of cargo on the basis of tariff in effect in each country and timely clearance of rolling stock on 6th January 1994. The contracting parties have agreed that in border, customs and sanitary control relations the conditions of international agreements to which they are parties will prevail. Significantly, the memorandum identifies cotton and oil products for movement from Turkmenistan to Europe through Islamic Republic of Iran (Art.5) An agreement on railways between the two countries has to be prepared within six months of the signing of this memorandum.

Railways of Kazakhstan, Turkmenistan and Uzbekistan are party to the Organization for Railways Cooperation (OSShD, Warsaw) and use the system of Agreement on International Railway Freight Communication (SMGS) which is different from that adopted by the Islamic Republic of Iran. The Islamic Republic of Iran, as party to the Convention concerning the International Transport of Goods by Rail, Berne, 1980 (COTIF), follows the International Consignment Note System (CIM). Efforts are now being made by ECE and OSShD to harmonize the two systems.

Roads: Despite several shortcomings, the road network today provides an operative link among the ECO countries. Even otherwise, the role of roads as a mode of transport is expected to increase significantly.

The Central Asian countries have transparent borders among themselves and as such constitute a virtual customs union for purposes of border-crossing with the rest of the ECO members. In other words, the customs check point of say Kazakhstan with the Islamic Republic of Iran would start at Turkmenistan which in this case is the front Central Asian State.

There are twenty-one road border points among the ECO countries. Distribution of these is given in Table 5.1 below.

Table 5.1 Road border points among the ECO countries

Turkmenistan-Iran:	Four
Islamic Republic of Iran-Afghanistan:	One
Islamic Republic of Iran-Pakistan:	One
Tajikistan-Afghanistan:	Two
Kazakhstan/Kyrgyzstan-China/Pakistan/India: (China and India are not members of ECO)	One
Kazakhstan-China:	Four
Turkmenistan-Afghanistan:	One
Uzbekistan-Afghanistan:	One
Kyrgyzstan-China:	One
Uzbekistan/Kyrgyzstan-China:	One
Islamic Republic of Iran-Turkey	Three
Islamic Republic of Iran-Azerbaijan	Two

Bilateral Agreements

A number of agreements have been signed in recent years to facilitate transportation of goods among the countries in the ECO region. A list of these agreements³ appear at Annex VI Important agreements having bearing on the transit traffic are analyzed below:

1. *Agreement on Customs Procedures for goods in Transit between Customs Agencies of Azerbaijan, Armenia, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Uzbekistan and Ukraine (signed at Almaty on 2.4.1992).*

This is an important agreement signed in pursuance of Article 10 of the Agreement on principles of customs policy which make the Commonwealth of Independent States (CIS) a customs union inter alia to conduct a coordinated customs policy towards third countries. It prescribes in detail the customs procedures to be followed in respect of goods transiting through one or more of the contracting countries.

Transit goods are allowed to be transported under customs guarantees in packages, vehicles or containers where goods cannot be introduced or taken out after they are sealed. Transportation is under the guarantees of third country's customs, consignor or transport organization which is transporting such goods. (Art. 1).

³ As available to the Mission

In respect of imports, a transit document in duplicate, is issued on the freight customs declaration form (annexed to the agreement) by the border customs of the first CIS transit country. The document gives information about the number of shipping packages, seal number, destination customs, transit customs and purpose of consignment (for customs clearance). One copy is retained by border customs and the other, along with shipping documents, sent to destination customs. There is provision for follow up by border customs in the event of non-receipt of information about termination of transportation from destination customs (Art. 2).

Transit document is not issued when transportation is fulfilled under international transit procedure (Art. 2.6).

In respect of exports from CIS countries no transit document is issued. The departure customs stamps shipping document indicating possibility of exit to third countries (Exit permitted) and makes a notification about guarantees. (Art. 3).

Special clearing procedures are prescribed for heavy and bulky goods transported in open vehicles and in respect of re-exported goods.

The Agreement follows the Single Administrative document. It may be recalled here that the former USSR was party to the International Convention on the Harmonization of Frontier Control of Goods (1982).

2. Memorandum between Turkmenistan and the Islamic Republic of Iran on Customs Procedures for the transit transport and goods (signed at Tehran on 6.1.1994)

The objective of the Agreement is to develop transit traffic through their respective territories by providing free transit of goods (except weapons, ammunition, narcotics and forbidden goods) on determined routes lists of which is to be exchanged between the two parties.

The transit transport has been exempted from customs duties, taxes and collections except those stipulated by laws of both nations (Art. 3). Transit documents and stamps of each other's customs will be mutually recognized (Art. 4). Goods and transport in transit cannot be sold or given as gift (Art. 5). Instead of giving cash for goods, cargo and passenger transport in transit, written obligations from the corresponding organizations would be accepted (Art. 6).

The Agreement specifies the kind of information which the documents accompanying transit goods should provide. This includes country of despatch, origin, destination, name and address of sender and receiver, names of customs posts of transit value, weight and number of goods. The information has to be given in English.

Goods originating in contracting parties have to bear customs registration details.

Simple inspection is to be done in respect of goods where seals are undamaged. (Art. 8).

This is apparently a landmark facilitation Agreement as both Turkmenistan and Iran occupy strategic transit position.

3. *Agreement on bilateral Road Transportation of Goods between the Government of the Islamic Republic of Pakistan and the Government of the Islamic Republic of Iran (signed at Islamabad on 28.7.1987).*

The Agreement between Iran and Pakistan covers bilateral trade originating in two countries.

The trade has to be carried by vehicles registered in either country by drivers who are citizens of contracting parties. While the vehicles under TIR Carnet are exempted from guarantees, the introduced transport Companies can give written guarantees. Others have to provide guarantees as per the national law. The Agreement thus provides for three kinds of approach: one for TIR Carnet, the second for recognized or registered companies and the third, which apparently is more strict, for operators outside the first two categories.

For trucks/containers with seals intact and goods conforming to law, subject to other conditions being alright, entry is allowed. Regarding weight and dimension of vehicles, local laws will apply.

The agreement was signed in 1987 i.e. much before ECO was expanded to include Afghanistan and the Asian Republics. It does not specifically cover third country trade.

4. *Agreement between the Government of the Islamic Republic of Pakistan and the Government of the Kingdom of Afghanistan for regulation of Traffic in Transit (2-5-1965)*

(The Agreement is supported by a Protocol signed on 26.8.1965)

Afghanistan being a land-locked country required access to high seas. This agreement provides freedom of transit on reciprocal basis. Two routes are specified with provision for more, if required, and the commitment is made for adequate facility for traffic in transit (Art. 3).

Freedom from customs and other duties is allowed (Art. 4).

"Afghan Transit Area" in the port of Karachi has been granted by Pakistan on non-reciprocal basis for non-hazardous cargo (Art. 5).

Commitment to meet in full all requirements of wagons on both routes is made (Art. 7).

National treatment to traffic in transit for railway and port charges is committed (Art. 10).

Art. 13 is significant as it tries to ensure that "nothing in this Agreement or its Annexes will affect in any way the political stand of the two countries or the political differences existing between them, and the contracting parties fully reserve their rights with regard to these subjects".

This is essentially a bilateral arrangement between Pakistan and Afghanistan.

5. *International Road Transport Agreement between the Government of Turkmenistan and the Government of the Republic of Turkey (signed at Ashkhabad on 2.5.1992).*
6. *International Road Transport Agreement between the Government of Turkmenistan and the Government of the Islamic Republic of Iran (signed at Ashkhabad on 24.10.1993).*
7. *Agreement on International Road Transport between the Government of the Islamic Republic of Iran and the Government of the Republic of Kazakhstan (signed at Tehran on 12.5.1993).*
8. *Agreement between the Ministry of Transport of the Republic of Kazakhstan and the Ministry of Motor Vehicle Transport and Roads of Turkmenistan on motor vehicle communications (signed on 10.5.1992).*

Analysis of above bilateral agreements

The Turkmenistan-Islamic Republic of Iran agreement (Art 8) states that transportation of goods by vehicles between two countries and in transit shall be operated without any limitations. However, Turkmenistan-Turkey agreement stipulate that carriage of goods in transit shall be subject to prior permit based on quota (Art 12). Without special permit a carrier shall not carry goods from territory of other contracting party to third countries (Art 8). Again, an unloaded vehicle registered in one contracting party can not enter the territory of other to collect goods without a permit. (Art 9). The Agreement goes on to say that a vehicle registered in one territory can not collect return load to its territory or to third countries after delivery of goods to the other contracting party without permit.

The Turkmenistan-Islamic Republic of Iran agreement allows number plates of vehicles and documents of registration of vehicles and driving licence to follow International Vienna Convention of 1968. The Turkmenistan-Turkey agreement recognizes TIR carnet and "Tryptique" or "Carnet de passage" and other documents required by national laws and regulations (Art 17). Islamic Republic of Iran-Kazakhstan agreement allows the temporary importation of vehicles subject to national laws (Art 8).

Another feature is with regard to levy of charges. While the vehicles are exempted from import-export duty, the Turkmenistan-Islamic Republic of Iran agreement provides for tolls, road tax etc. (Art 4), the Turkmenistan-Turkey agreement provides, in addition to road taxes, "fees" to cover difference between national and international price of fuel, charge for weight/dimension exceeding the limit (Art. 5). Islamic Republic of Iran-Kazakhstan and Islamic Republic of Iran-Turkmenistan agreements do not prescribe any charge.

The above analysis bring out the wide variations among the agreements entered by the same party with different countries. Lack of uniformity can seriously impede the movement of vehicles and traffic.

Problem areas and solutions

1. ECO region has large number of border crossings. This number is likely to go up further with the strengthening of road and rail infrastructure. In order to facilitate border crossing, it is necessary that the customs and administrative procedures are streamlined, ideally in

accordance with international conventions. An important convention is the Convention on Harmonization of Frontier Control of Goods (1982). A complete list of relevant Conventions is given in Chapter 6, para 4(a)(1)

The accession of the ECO member countries to the international conventions reflected in the ESCAP resolution 48/11 on road and rail transport modes in relation to facilitation measures (Table 5.2) will create a minimum legal basis for efficient cross-border land transport in the region.

In addition, ECO countries may also consider entering into uniform bilateral agreements on customs procedures between themselves.

2. The existing bilateral agreements contain several clauses which seek to regulate transit trade through the system of quotas, permits, special permits and so forth. The experience of other countries has been such provisions tend to create complications, hold ups and eventually prove costly: with cargo going to third parties. While protection to nascent enterprises may be necessary in some cases, ECO countries may consider minimizing such provisions in the interest of promoting and facilitating transit trade.

3. The national rules and regulations relevant to areas of environment, road protection and safety vary from country to country and constrain the movement of vehicles. While countries are entitled to safeguard their interests, it may be remembered also that nothing can be more frustrating than long waits for vehicles because a rule about visa, fumigation or load restrictions is not satisfied. In order to overcome such problems, in the short run, these countries may consider bringing out booklets in different languages highlighting important rules for the use of freight forwarders/drivers. The long term solution lies in following international standards and acceding to conventions as mentioned in the preceding paragraph.

4. The possibility of concluding a regional transit treaty may also be considered to facilitate movement of traffic. (This has been dealt with in detail separately in this report).

5. Ancillary facilities at border-crossing for vehicles and drivers are needed to be improved. Importance of facilities in the form of exchange of currencies, repairs, first-aid, rest and eating rooms, petrol pumps, telephones cannot be over emphasized.

6. There is at present some misinformation about the capacity and conditions of the roads near border points. Can a 20' and 40' container pass through a particular border? Is all kind of vehicular traffic allowed at functional border-crossing? There have reportedly been occasions when large trucks had to return because of standards/parameters of roads. The information gap needs to be bridged.

5.2 Problem areas and land transport facilitation needs of Central Asian Republics

This section is in two parts. Part I deals in detail with the legal framework for transportation of goods across the borders. Part II details country-wise facilitation steps already taken and suggests additional measures required.

PART I

LEGAL FRAMEWORK FOR BORDER-CROSSING

The Changing Scenario

Before disintegration of the USSR, the traffic needs of former Republics, especially on long-haulage, were mainly served by railways which accounted for over 70 per cent of the tonne-kilometre carriage; roads carrying about 8 per cent⁴. This situation is undergoing fast change and in fact evidence of such a change are already manifesting themselves at places like the Turkmenistan-Iran border where hundreds of vehicles are reported to be passing everyday. Turkmenistan sees auto transport as the future mainstay of its economy and anticipates an annual movement of 140-145 million tonnes by road by the year 2010 although railway would continue to play an important role. Same pattern is expected in Uzbekistan, Kyrgyzstan and Tajikistan. Kazakhstan, may find railway to be the main mode because of the size of the country. Whatever be the mode-split, it is almost certain that the role of roads in Central Asia is going to be much larger than before. This would necessitate more attention to road facilitation measures where the number of operators is usually very large involving small and medium enterprises.

However railways will be playing an increasing important role in providing access to the sea ports in the South (particularly after a new Islamic Republic of Iran-Turkmenistan railway line is completed in 1996) and the East.

Another important feature to be underlined is that the countries of Central Asia are passing through a period of transition. They are in the process of organizing their customs and administrative services, evolving new procedures and codes, introducing customs tariffs and other taxes, adjusting currencies and formulating their economic policies. They are desperately trying to find new road, rail and land-cum-sea routes to reach all possible regions of the world. At the same time, their effort is also to keep the existing systems lubricant and going so as to avoid disruptions. To achieve above objectives, a large number of agreements are being signed in succession. The rapidity of the changes make it difficult to track them by securing even vital documents.

ANALYSIS OF AGREEMENTS

A number of agreements have been concluded to facilitate movement of cargo within CIS and beyond. For our study, these agreements are divided into two categories:

- CATEGORY those relating to transportation within CIS and transit cargo;
CATEGORY II: those relating to border-crossings with countries other than CIS.

CATEGORY I:

A total of nine agreements available in this category have been studied (full list at annex VI). These cover the areas of Customs procedures: principles of cooperation and conditions of interrelations in the field of transport and those specific to railway and road sectors.

⁴ ESCAP document No. TAC/IALTID/4 25.10.1991 (Para 4 of ECE Paper).

During the discussions with the officials of Customs Department in Uzbekistan, Kazakhstan and Turkmenistan, the study mission was apprised that borders among Central Asian countries were transparent and practically no checks were made in respect of inter-country traffic. However, transit cargo was subjected to check. Single administrative document was followed for transit cargo.

*Agreement on principles of customs policy
among the Commonwealth of Independent States
(except Ukraine) signed at Moscow on 13/3/1992*

The objective of this Agreement is to establish a Customs Union made up of the total customs area of the contracting parties (Art. 1).

Goods circulated inside the Customs Union will not to be subject to Customs duties and other taxes and collections having the same effect (Art. 2). No quantitative restrictions will be imposed on such goods (Art. 3).

According to the agreement the contracting parties will coordinate a common customs tariff and "will promote uniform domestic taxation of goods and other articles imported in to the common customs area and exported from this area".

A Customs Council has been formed to ensure the functioning of the Customs Union; to prepare and implement single customs policy; to collect and analyze customs statistics and so on.

A further agreement has been signed among CIS on 2/4/1992 laying down the customs procedures for goods in transit cargo.

Under the agreement; a reduced system of customs inspection, mutual recognition of customs seals, and other cooperative arrangements are followed. The goods are inspected at the destination customs only, if the seals are not damaged.

Agreement between the Government of the Russian Federation and the Government of the Republic of Kazakhstan on the Principles of Cooperation and Conditions of Interrelations in the field of Transport (signed on 23.3.1992).

Agreement between the Government of Kazakhstan, the Republic of Kyrgyzstan, the Republic of Tajikistan, Turkmenistan and the Republic of Uzbekistan on Principles of Cooperation and Coordinations of Relations in the area of Transport (signed at Bishkek on 23.4.1992).

These are very significant agreements as they tend to cement and sustain in future the integrity of the transport systems of CIS. These are in fact the mother agreements laying down the principles in pursuance of which further specific agreements on road and rail have been concluded.

The agreements commit the parties to promote mutual economic, scientific and technological cooperation in the field of all modes of transport. Beneficial treatment is secured for all modes on the territory of contracting parties. Goods, passengers and means of transport are exempted from all taxes including those relating to "use and maintenance of roads or other ways". The operators' income is also exempted.

The Contracting parties have to maintain valid rules, regulations, instructions, standards and technical conditions which regulate transportation. Amendments are to be made with consent and effort to secure unification of transport legislation has to be made.

According to the Agreements the parties have to maintain valid the order of international traffic which was set up before the intergovernmental agreements of the USSR with other countries, as well as provisions of Conventions and Other Agreements in the field of transport to which the USSR was a party.

Facilitation, promotion of joint ventures among the countries, carrying out training according to uniformed methodology etc. are other important provisions.

In short, these agreements maintain the unified character of the transport sector of CIS.

These agreements also facilitate accession of Central Asian Republics to various UN Conventions as the USSR was party to several of the Conventions in the field of transportation.

CATEGORY II:

A total of six agreements have been analyzed. (Full list of agreements at annex VI). Following agreements deserve special mention.

Memorandum between Turkmenistan and the Islamic Republic of Iran on Customs Procedures for the Transit Transport and Goods (signed at Tehran 6.1.1994).

This prescribes customs procedures for transit cargo. The Memorandum follows international procedures. A simple inspection is suggested where customs seals are undamaged. Goods and vehicles are exempted from customs duties and other taxes. The kind of details which documents accompanying the cargo should contain are clearly described.

The provision with regard to guarantees required by third party vehicles during transit is not quite clear.

Agreement on Motor Transport between the Government of the People's Republic of China and the Government of the Republic of Kazakhstan (signed at Beijing on 26.9.1992).

The objective of the agreement is to promote motor passenger and freight transport. Transportation is to be allowed through hauliers holding permits. Each trip is to require a permit. Third country cargo can be carried through special permits. Special permits are also needed by vehicles not satisfying national rules relating to load etc. Waybills are to be as per procedures are to be as agreed between two parties.

Apparently the Agreement is oriented to bilateral trade.

Agreement on International Road Transport between the Government of the Islamic Republic of Iran and the Government of the Republic of Kazakhstan (signed at Tehran on 12.5.1993).

International Road Transport Agreement between the Government of Turkmenistan and the Government of the Islamic Republic of Iran (signed at Ashkhabad on 24.10.1993).

Both Agreements cover bilateral and transit traffic.

The operations would be without limitations. Vehicles registered in contracting countries are allowed to carry passengers and cargo. The vehicles are exempted from import/export taxes or customs tax but not from charges for using roads and other facilities. Plate number of vehicles, registration documents and driving license are to be in accordance with International Convention of 1968, Vienna.

Problem Areas

Customs facilitation is apparently not a major problem at present within Central Asian countries. However, the situation may change and barriers in respect of transit cargo may start showing up in one form or the other if we take into account factors such as:

The third country traffic at present is very limited. With the development of transport infrastructure, and settling of relations, this is anticipated to grow significantly;

Some of the bilateral agreements (e.g., Turkmenistan-Turkey and Kazakhstan-China) seek to protect domestic transport by stipulating the permit/special permit and quota requirements. These may result in greater amount of check and scrutiny.

Customs service is newly born in Central Asian countries. Once it grows and acquires expertise, the position is likely to be different especially if there are cases of drug smuggling etc. (some cases have already been detected).

Some difficulties are beginning to be experienced by a country in its exports and imports through another CIS country. The latter is demanding certificates of origin on the basis of actual inspection of export goods and cash guarantees in respect of goods imported on private account. Similar demands may grow with the increased role of private sector.

To forestall future problems, the countries of Central Asia may consider acceding at the earliest to international Conventions that are listed Chapter 6, para 4(a)(1). These will help in streamlining the procedures.

Many officials in Central Asian countries expressed interest in becoming party to Conventions but were not aware of the implications and procedures to be followed. ESCAP may organize a workshop in one of the countries on various international Conventions and procedures for acceding to such Conventions. A representative each from Departments of External Affairs, Customs and Transport from every country need to be associated for quick results.

The Central Asian countries may also consider seriously entering into a transit treaty with Iran, Turkey, Pakistan and China. One of the objectives to be achieved could be to

secure (a) separate area at convenient ports for handling of transit cargo and (b) special concessions in the form of priority berthing of ships bringing transit cargo, free time, concessional port charges etc. Transit Treaty for the whole ECO region could also be considered.

Keeping in view the enormous importance of transport and transit in the economic growth of the nations, the Central Asian countries may consider setting up National Transit Facilitation Authorities with the objectives of:-

- formulating national transport policy to achieve optimum use of infrastructural assets through modal-split;
- promote the use of modern techniques like Information management system, electronic data interchange etc.;
- explore alternative transit routes;
- secure cooperation of neighbouring countries for transit facilitation;
- carry out cost analysis of transportation through various routes/modes to guide potential users;
- exchange data/information among adjacent land-locked countries;
- encourage multimodalism, containerization and institution of freight forwarders;
- act as government focal point for contact with other governments and international bodies.

Due attention also needs to be paid to the development of trained persons to manage customs administrative (automation, testing laboratories, enforcement) business of freight forwarding, management of inland container depots and container freight stations, Associations of bodies and so on.

PART II

COUNTRY-WISE PLAN OF ACTION TO IMPROVE TRAFFIC FACILITATION IN ADDITION TO SETTING UP NATIONAL TRANSIT FACILITATOR AUTHORITIES

Turkmenistan

Steps taken

Turkmenistan is fully conscious of its crucial geographical position and has already taken several measures to facilitate transit trade. It has been the first country among Central Asia to accede (1993) to the International Conventions on (1) Road Traffic (1968) and (2) Road Signs and Signals (1968) and considering the possibility of the accession to other conventions as reflected in the ESCAP Resolution 48/11 on road and rail transport modes in relation to facilitation measures. Turkmenistan has signed a number of bilateral agreements with neighbouring countries to facilitate traffic. It is bestowing due attention to bridging the missing railway link with Iran and in fact has already completed 55 per cent of the 132 km rail stretch which lies in its territory.

Further Steps needed

On account of its strategic location, Turkmenistan has important role to play in the facilitation of transit and trade. Areas for priority action would be:

- i) Streamlining of procedures;
- ii) Institutional arrangements; and
- iii) Other facilitation measures.

These may be discussed as under:

- (i) Accession to international Conventions may be treated as a priority item. A list of relevant Conventions has been reflected in (Chapter 6, para 4(a)(1) to this report which also includes International Conventions (Table 5.2) reflected in the ESCAP Resolution 48/11. The national laws and procedures need to be kept in line with the international procedures and practices especially in matters of frontier controls and customs regulations pertaining to movement of containers and their stuffing/destuffing.

- (ii) Institutional set up
Multimodalism is very important for efficient and cost-effective transportation especially in respect of land-locked countries. Multimodalism can receive boost through specialized freight forwarding agencies both in the public and private sector. However, developing the institution of multi-modal transport operators is both capital intensive and time consuming. It is, therefore, desirable to conceive of joint ventures with public and private sectors participation. The public sector companies have considerable experience and financial standing. The same together with the efficiency and marketing skill of private sector can prove to be a boon in providing fillip to transportation, facilitation and proper modal-split. Such ventures could ideally be formed in cooperation with other Central Asian countries keeping in view the uniformity in the transport systems of these countries and their close interdependence.

- (iii) Other facilitation Measures:
 - (a) Turkmenistan may wish to seriously consider entering into transit treaties with coastline countries of Islamic Republic of Iran and Turkey. Both countries are strategically located and provide links to wider markets. Iran being immediate neighbour may require special attention. Priority attention may be paid to this treaty.
 - (b) Setting up of Container Freight Stations (CFS) and upgradation of existing container terminals is another area which deserves priority attention. Turkmenistan may consider extending special incentives to the potential entrepreneurs willing to set up such facilities and also consider a review of the existing terminals with a view to attaching satellite CFSs to such terminals.
 - (c) Facilities at border check points need to be improved. Creating amenities like rest houses, repair shops, currency exchange, telephones, and separation of check posts for passengers and goods need urgent attention.

Kazakhstan

Steps taken

Kazakhstan and China have entered into bilateral agreements on railways and motor vehicle transport. These agreements provide legal base for the traffic to move between the two countries.

There is reportedly already a third country transit trade taking place through China-Kazakhstan rail bridge. There is also not yet movement of containers either by rail or road. However an agreement was signed on 1 June 1994 to actively promote such a traffic. This study Mission learnt during its visit that in the case of road cargo, trans-shipment at borders is being resorted on account of difficulties faced by operators due to variations in the road safety and other regulations of the two countries.

An agreement has been signed in Islamabad on 9 March 1995 between the governments of the Republic of Kazakhstan, Republic of Kyrgyzstan, and the Islamic Republic Pakistan, on transit transport.

An agreement has also been signed on 12 March 1995 between the governments of the Republic of Kazakhstan and the Islamic Republic of Pakistan on international movement of motor vehicles.

Steps needed:

Kazakhstan and China may wish to consider accession to international Conventions relating to land transport and Customs procedures on priority basis. The International Conventions as reflected in the ESCAP Resolution 48/11 on road and rail transport modes in relation to facilitation measures (Table 5.2) and Transit Conventions could be given a priority for consideration.

The relevant provisions of these Conventions need to be given statutory backing by suitable national laws.

Both the countries may conclude agreement on customs procedures so as to provide basis for checks at border-crossings. The provisions, of the International Convention on the Harmonization of Frontier Controls of Goods (1982) and other international practices need to be kept in mind.

Kazakhstan may also consider entering into a transit treaty with China for securing coastal facilities and special consideration for the transit traffic at convenient ports in China. This is an important measure which could help in providing boost to the third country trade and therefore needs serious consideration.

The existing bilateral motor vehicle agreement between the two countries is restrictive as practically no cargo movement can take place without securing permits and special permits, more so in the case of transit traffic. If China is to provide a transit route for Pakistan, liberal agreement between the parties would be necessary.

Kazakhstan's transit trade through Southern Corridor has inevitably to depend either on road or on modal split as there is no through rail route, yet to countries of Pakistan, Afghanistan or the Islamic Republic of Iran. For making optimum use of the existing modes of transport, the institution of Multi-modal transport operators need to be encouraged, if possible through joint ventures of public and private bodies.

Uzbekistan

Steps taken: Uzbekistan has concluded agreements with Turkmenistan, Iran, Pakistan and the Russian Federation. It also has customs and transport agreement with CIS.

Steps to be taken: Uzbekistan may wish to accede to international Conventions on priority basis. The International Conventions as reflected in the ESCAP Resolution 48/11 on road and rail transport modes in relation to facilitation measures (Table 5.2) and Transit Conventions could be given a priority for consideration.

Uzbekistan may also wish to consider conclusion of more bilateral agreements with the bordering states to legalize border-crossings of its vehicles, goods and operators. It also needs to align its laws and procedures with international practices.

Uzbekistan could aim to build strong institutions of freight forwarders and multimodal transport operators. This is of great importance because the economy of the country is completely dependant on adequate, efficient and cost-effective transportation. In order to ensure that the institutions work efficiently and in cost-effective manner, association of private sector would be desirable. The question of attracting world class freight forwarders and multimodal transport operators by extending incentives and special facilities is recommended.

Keeping in view the location of the country, it would be worthwhile exploring the possibilities of working jointly with Turkmenistan and Kazakhstan in matters like transit treaty with the coastal countries. Such cooperative effort would have tremendous cost saving and facilitation advantage. The possibility of Transit Treaty for the whole ECO region could be also considered.

5.3 Container Traffic Facilitation

Containers, designed to stand multimodal transportation with built-in safety to prevent removal or introduction of goods after they are sealed, provide an ideal mode of transport for the international trade of central Asian countries which, besides many borders to cross, need to achieve modal split for optimum use of their modes of transport. Containers are however, yet to gain prominence in the new corridors of east and south. To facilitate their growth and swift and cost effective movement, it is imperative to create international legal framework and also to streamline national procedures.

A number of Conventions have been adopted over years to facilitate international trade including containers. Important among these are discussed below.

(i) Customs Convention on Containers (1972)

This Convention is administered by the Customs Cooperation Council.

The objective of the Convention is to facilitate the use of containers in international traffic. The contracting parties allow free admission to containers subject to their being re-exported, normally within a period of three months. The import, both of loaded or empty, containers is granted without the need for Customs documents and without security or guarantee. However, the owners of containers have to be represented in the country and maintain full record of the movement of each container which, on demand, has to be made available to the customs.

The Convention lays down procedure for approval of the design and actual manufacture of the container. Each box has to have its individual distinguishing number, owner's name and other details. It has to be capable of simple and effective sealing, and once sealed, it must not be possible to introduce or remove any goods without breaking the seal or leaving traces of tampering.

The Convention provides for the damaged containers to remain in the country subject to duty being paid and the container either abandoned or destroyed.

Genuine spares/accessories are allowed to be imported free of duty for repairs/replacement.

The Convention allows use of container for internal traffic once only on the journey which brings it nearer to its point of export;

The Central Asian and other ECO members (if they have not yet done so) may consider accession to this important convention.

There are a few more Conventions which although have wider coverage but are very relevant to the container traffic also. These Conventions are:

(ii) Convention on Transit Trade of Land-locked States of 1965 (New York Transit Convention)

This Convention recognizes the freedom of the high seas for countries who have no direct access to the sea. The Convention provides that states situated between the sea and a land-locked state should allow the latter free transit through their territory, and should also allow ships of the land-locked countries treatment equal to that of their own ships regarding access and use of seaports.

Goods in transit are not to be subjected to customs duties or taxes. Charges for providing services may be levied to cover expenses. Adequate and timely transport and handling equipment at points of transshipment has to be provided.

Operations such as transshipment, warehousing, break-bulk, change in the mode of transport shall be allowed.

No discrimination is to be exercised which is based on the place of origin, departure, entry, exit or destination, or ownership of the goods or place of registration or flag of vessels, vehicles and other means of transport.

The contracting party is not bound to permit transit of persons whose admission is forbidden. Goods prohibited on grounds of security, morals, public health etc. will also not be allowed.

This Convention though not exclusively meant for containers is of immense relevance because by combining sea-cum-land routes, full benefits of containerization and cost-savings in transportation can be realized.

(iii) Customs Convention on the International Transport of Goods under cover of TIR Carnets (TIR Convention) of 1975

This is one of the Conventions which have led to substantial increases in transport efficiency and cost savings and is today widely being used in different regions of the world.

The Convention is being kept up-to-date through amendments. For example, in September 1987 a multimodal TIR Carnet was made available for use. Under the Convention some part of the journey has to be performed by road.

The objective of the Convention is to facilitate the international carriage of goods with the minimum of interference by Customs en route. It provides that goods shall be carried in containers or in vehicles whose load compartment is so constructed that there shall be no access to the interior when secured by the customs seal. If tampered, results will be visible.
Guarantee system

Contracting Parties are required to approve in their territories associations which belong to international guarantee chain. Such chains issue carnets for use by the guaranteeing associations.

(iv) International Convention on the Harmonization of the Frontier Control of Goods (1982)

The aim of the Convention is to facilitate the international movement of goods by reducing the requirements for completing formalities as well as the number and duration of controls.

The Convention covers:-

- (a) Harmonization of Customs and other controls;
- (b) Medico-sanitary inspection;
- (c) Veterinary inspection;
- (d) Phytosanitary inspection;
- (e) Control of Compliance with technical standards specified by relevant laws or regulations;
- (f) Quality control.

For common land frontiers the Convention suggests a system of joint control of goods and documents through the provision of shared facilities and concurrent working hours of customs and other control bodies at check posts.

National initiatives

To obtain full benefits of containerization, the relevant international Conventions have to be translated into national laws to make them legally enforceable instruments. Besides, conscious policy effort is also required to promote and facilitate containerization. Following measures are suggested in this regard.

The Customs, which have a major role to play in containerization, should lay down clear instructions for the inland movement, handling, stuffing/de-stuffing of containers and the kind of safeguards required to be taken. Such instructions should cover factory stuffing/destuffing of containers, cost of providing Customs Services and so on.

Guidelines need to be formulated for the setting of container freight-terminals or container freight-stations as common user facilities. As the Central Asian

Countries are moving towards market economy, the private sector may be allowed to set-up and run such facilities under Customs supervision.

Usually a single-window mechanism for clearance of proposals for establishment of facilities by the Government is found useful in cutting delays. In this mechanism, the potential entrepreneurs do not have to approach the various government departments separately.

Developing the institution of multi-modal operators in the country is useful in promoting containerization. The principles outlined in the Convention on International Multimodal Transport of Goods (1980) provide good guide for national legislation. The possibility of setting up joint-ventures with the involvement of state enterprises may be useful in this regard.

Conclusion of transit treaties with countries of the Islamic Republic of Iran, Turkey, Pakistan and China who have coastline is strongly recommended for consideration. Such treaties can be based on the Convention on Transit Trade of Land-locked states, (New York, 1965) and some of the successfully operative bilateral transit treaties like that of Indo-Nepal.

To obtain full benefits of containerization, national laws and procedures must also be streamlined to facilitate inland movement of containers and their stuffing/destuffing near the door steps of the users. This would require provision of customs clearance facility at approved inland container depots and container freight stations as also at the works of established enterprises. Containers to and from these places may be allowed to be moved by both road and rail with minimum of restrictions in the form of guarantees/deposits.

5.4 Measures to Improve Border-Crossing Transport

Central Asia has 14 road and 3 rail border crossing points with its immediate neighbours in the eastern and southern corridors. The transport infrastructure is under further development and more border crossing points are expected to open up in the near future.

In order to facilitate movement of traffic across the borders, a large number of bilateral and multilateral agreements have been entered into by the Central Asian countries between themselves and with others. Analysis of such agreements has been done in the preceding sections of this Chapter. The various agreements have undoubtedly created legal basis and helped in the transportation of goods and passengers across the borders. However, keeping in view the multitude of issues which are inevitably involved in international transit-traffic, more so in respect of land-locked countries, additional measures need to be taken to provide sound basis for the transit of goods, vehicles and operators across the multiple borders. These are discussed below:

(i) Accession to International Conventions

Following table 5.2 indicates the position of accession of Central Asian and its neighbouring countries to various vital International Conventions reflected in the ESCAP Resolution 48/11 on road and rail transport modes in relation to facilitation measures:

Table 5.2 Accession to International Conventions

Country	Convention on Road Traffic (1968)	Convention on Road Signs and Signals (1968)	Customs Convention on the International Transport of Goods under Cover of TIR Carnets (1975)	Customs Convention on the Temporary Importation of Commercial Road Vehicles (1956)	Customs Convention on Containers (1972)	International Convention on the Harmonization of Frontier Control of Goods (1982)	Convention on the Contract for the International Carriage of Goods by Road (CMR) (1956)
<u>Central Asia</u>							
Kazakhstan							
Kyrgyzstan							
Tajikistan							
Turkmenistan	x	x					
Uzbekistan							
<u>Adjacent Countries</u>							
Afghanistan			x	x			
Azerbaijan							
Islamic Rep. of Iran	x	x	x				
Pakistan	x	x					
Turkey		x	x		x		
<u>The Russian Federation</u>							
The Russian Federation	x	x	x		x	x	x
China					x		

As already recommended in ESCAP Resolution No. 48/11, the countries may consider acceding to these Conventions on priority basis, as it would help in bringing about uniformity, streamlining procedures and formalities and provide legal base.

(ii) Accession to international Transit Conventions

Existing status of accession to the above conventions is indicated below:

Table 5.3 Accession to international Transit Conventions

Country	Convention and Statute on Freedom of Transit, 1921 (Barcelona Transit Convention)	Convention on Transit Trade of Land-locked States, 1965 (New York Transit Convention)
<u>Central Asia</u>		
Kazakhstan		
Kyrgyzstan		
Tajikistan		
Turkmenistan		
Uzbekistan		
<u>Adjacent Countries</u>		
Afghanistan		x
Azerbaijan		
China		
Islamic Republic of Iran	x	
Pakistan		
Russian Federation		x
Turkey	x	x

Transit Conventions have been evolved keeping in view the geographical handicaps of the land-locked countries. Accession to them should be considered favourably both by the Central Asian and their adjacent countries.

(iii) Conclusion of bilateral Agreements

Several bilateral agreements have been signed to regulate road and railway traffic. The table 5.4 below gives the position of agreements as per information available:

Table 5.4 Bilateral agreement on road and rail traffic regulations

	Turkmenistan	Uzbekistan	Kyrgyzstan	Kazakhstan	Tajikistan	Islamic Rep. of Iran	Afghanistan	Pakistan	Azerbaijan	Turkey	China	Russian Federation
Turkmenistan		RL		RD		X RD, RL				RD		
Uzbekistan	RL					RD		RD				RD
Kyrgyzstan						RD				RD		
Kazakhstan	RD		RD			RD ¹				RD, RL ₁	RD, RL ₁	RL
Tajikistan												
Islamic Rep. of Iran	X RD, RL	RD	RD	RD ¹					RD			
Afghanistan								RD ₁				
Pakistan		RD				RD					RD ₁	
Azerbaijan						RD						
Turkey	RD			RD								
China				RD, RL ₁			RD ₁					
Russian Fed.		RD		RL								

RD - Road
RL - Rail

RD₁) Agreement with X - Customs
RL₁) Protocol

Countries may consider entering into more such bilateral agreements including those on Customs procedures.

(iv) Additional Measures

In order to provide enforceable legal basis to the international conventions/agreements, corresponding legislative provisions need to be made at the national level.

Familiarization of officers at the field level with the legislative provisions and rules and regulations relating to transit traffic is necessary.

The border crossing points need to be equipped with parking place and amenities.

Separate check points for goods and passenger traffic are recommended as the kind of checks to be carried out in two cases are different. This will facilitate quick movement at check posts.

The Customs and all other Administrative checks need to be carried out at a single point so that the traffic is not stopped time and again. Joint examination by officials of two countries may be considered as a long term measure.

Setting up of Joint Facilitation Committees consisting of officials and users organizations is recommended at all border crossing points with an apex level body to cover all borders.

(v) Use of Electronic Data Interchange (EDI)⁵

EDI is defined as:

"Computer to computer transfer of commercial or administrative transactions using an agreed standard to structure the data pertaining to that transaction" (UNCTAD).

Key elements of an EDI system

The key elements of an EDI system are:

- hardware (computers);
- telecommunication networks; and
- communications software and translation software.

Hardware

Hardware is the technical term for all types of computers and the related physical equipment. Computers are key elements in establishing EDI communications as they provide the physical interface which enables and facilitates the electronic transmission of messages between two or more trading partners. An EDI system can be established using any combination of mainframe and/or personal computers.

⁵ ESCAP has produced a useful Manual on EDI in Transport, 1993.

Telecommunication Networks

Telecommunication facilities consist of telephone lines which provide the medium over which information can be electronically transmitted between sending and receiving computers. The connection may also be made via satellite.

Communications software and Translation Software

Communications software enables messages to be transmitted and received between computers. For one computer to "talk" to another computer, they must have communications software and translation software.

Translation software enables messages to be en-coded and de-coded into a format which both computers can understand. Software at the transmitting computer, "translates" the message into the required format or sequence of data elements as demanded by the message standard. At the receiving computer, the software translates the standard message into a format which can be understood by the receiving computer and printed or displayed in plain language.

While EDI needs basic infrastructure in the form of computers, good telecommunication system and software, technology for EDI is not a major issue because the same is well developed and is readily available. EDI basically is a management issue.

Benefits of EDI include:

- reduction in clerical costs by avoiding re-entry of data and copying documents;
- elimination of errors;
- instantaneous transfer of information between concerned parties;
- streamlining of operations;
- reduction in inventory;
- greater facilitation of trade through the speeding up of Customs clearances;
- improved cash flow and;
- better customer services.

In short, EDI provides accuracy, speed and savings in cost. It sharpens the competitive edge of business through just-in-time, quick response and better inventory management techniques.

EDI as a measure of facilitation

EDI as a tool for facilitation of traffic has proved to be of tremendous value. Customs, port authorities, transport providers, large freight forwarders and banks in several countries are using EDI in ever increasing number. A stage in fact is fast

approaching when it will be difficult for any country, which wants to stay in the international trade, to ignore EDI.

In the case of land-locked countries of Central Asia, where many check posts are involved and the documentation and information have to be exchanged among several agencies, EDI can be of significant value. EDI is also of help in the successful working of multimodalism and containerization as it enables an efficient record of container and cargo movement by any mode of transport.

To realize full cost benefits of EDI, economic justification in the form of adequate volume of traffic, repetitive nature of transactions, multiplicity of agencies etc. is necessary. In the case of Central Asia the trade turnover is yet to gain its full potential. Besides, Customs and other bodies are in their formative stages. In these circumstances, EDI could be introduced in phased manner. Our recommendations in this regard would be that the governments may:

- start using computers in the departments of Customs and Transport;
- keep the forms and procedures as simple as possible;
- improve the quality of telecommunication services;
- make suitable provisions in the law to recognize the electronic messages, signatures etc.
- possibly through joining the UN EDIFACT Board for Europe keep themselves abreast with the developments in the field of EDI.

(vi) Development of ECO Transit Treaty

As indicated earlier the development of the Transit Treaty for the whole ECO region could be considered such an approach is presented in the following paragraph 5.5.

5.5 ECO Transit Treaty

Initial Observations

A workable regional treaty pre-supposes existence of complementarity of interests in more than one ways and a reasonably sound common meeting ground among member countries in the form of level of economic development, administrative and other procedures and systems in vogue and so forth. In the case of ECO region, both negative and positive factors present themselves. For example, some countries are economically and in infrastructure much more developed than others. The procedures, systems and regulations are different. In a situation like this, reaching of consensus could be a long drawn process.

Introduction

A regional treaty on transit need to explain in reasonable detail the background and special features justifying conclusion of such a treaty. Following material is relevant for this purpose:

- Of the ten countries which constitute ECO, seven are land-locked.
- Economic growth of land-locked countries depend on well developed and efficient transport infrastructure with access to high seas.
- Three ECO member countries have coastline which they are willing to share with the rest of the members.
- The land-locked members in themselves occupy land gateway position for reaching some regions of the world. They are willing to share such land bridges with rest of the members.
- There is thus some mutuality of interests.
- Development and efficient maintenance of transport infrastructure with access to seas involves collective effort.
- Keeping in view the mutuality of interests and the desire to help each other, particularly the land-locked members, all members feel committed to develop transport infrastructure and ensure to facilitate free flow of transit traffic.
- The proposed treaty is in conformity with the recommendations made in relevant Conventions and Resolutions of the United Nations.

Structuring of the Treaty

A regional transit treaty is basically an attempt to achieve the twin objective of:

- (i) Reaching Consensus at regional level on the objectives set out in international Conventions on transit treaties and
- (ii) Allevating some of the bilateral issues to multilateral platform so as to reduce legal and other administrative work and secure better achievement of the overall objective of faster movement of transit trade.

The basic material for the proposed transit treaty would be available from the following sources:-

I. International Conventions

- (i) The "Convention and Statute on Freedom of Transit, Barcelona (20.4.1921)".
- (ii) the "Convention on Transit Trade of land-locked states, New York (8.9.1965)".
- (iii) Two UNCTAD Resolutions on land-locked states adopted unanimously on 23rd March 1968 and 19th May 1972.
- (iv) United Nations "The Law of the Sea, Montego Bay (10-12-1982)" - Part X, Articles 124-132 - which say that the land-locked states shall

have the right of access to and from the sea as also freedom of transit through the territory of transit States by all means of transport without infringing Sovereign Rights and legitimate interests of transit states.

II. Bilateral Transit Agreements

Those provisions of existing bilateral transit agreements which have been successfully implemented over years and have stood the test of time for general adoption. Mention in particular be made to (a) allocation of separate areas at sea ports for transit cargo of land-locked states; (b) use of more than one transit route and different modes of transport; (c) greater freedom to freight forwarders; (d) fixation of transit tariff on the basis of mutual negotiations especially where a monopoly or state agency is involved.

III. Transport technological developments particularly in the area of multi-modalism and containerization

The above thoughts set out the tenor and basic structuring of the proposed draft ECO transit treaty. It would be pertinent to add that an innovative treaty of the kind envisaged has to be approached with care and caution because consensus have to be reached among the ten parties. The possible advantages, disadvantages and utility of the treaty will have to be studied carefully keeping in view several bilateral agreements that already exist or are in the pipeline and implications of customs and other arrangements of CIS countries.

6. MAJOR CONCLUSIONS AND RECOMMENDATIONS

General

Central Asian Republics Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan (which are since 1992 also new members of ESCAP), are focusing increasing attention to the development of international trade and tourism. However, being land-locked countries with land transport routes developed mainly to the North, they lack necessary land transport connections to sea ports in neighbouring countries in the South and in the East.

Keeping in view that the Outline Plan for the Development of the Transport Sector of the ECO Region (1993) stipulates, inter alia, the interconnection of the rail and road networks in the region and the introduction of proper land transport facilitation measures as well as the fact that railway systems of Central Asia and China have been recently interconnected, the study has been carried out to assist Central Asian Republics in general and Kazakhstan, Turkmenistan and Uzbekistan in particular in identifying land transport routes to the sea ports in the South and in the East, as well as in the improvement of related land transport facilitation. Major conclusions and recommendations of the study are therefore presented below in three parts namely: land transport routes to the sea ports in the South; land transport routes to the East; and facilitation measures.

There has been however an important problem area identified which is lack of complete and regularly updated road and rail transport database in the countries. Lack of data and information, particularly on cargo flows by commodities (present and projected) as well as on related costs of operations, was a serious problem which affected the analytical process of comparing and evaluating land transport options.

It is recommended therefore that a study on international trade development of Central Asian Republics including identification of potential traffic flows, etc. could be carried out and steps could be taken at national and ECO regional level to develop a format and establish an adequate database with necessary provisions for its regular maintaining and updating. Such database could also facilitate the implementation of the Outline Plan for the Development of the Transport Sector of the ECO region.

Routes to the South

As far as land transport routes from Central Asia to sea ports in the South are concerned major conclusions and recommendations are:

(a) At present only road or rail-cum-road routes are available. However, long distances along the routes strongly indicate the advantage of future railway routes. As the development of such railway routes is envisaged in the ECO region, it is important to properly forecast traffic flows along the rail, and also road routes.

It could be recommended therefore that a rail/road modal split study along the main rail and road transport routes is carried out for any new rail connection planned from Central Asia to sea ports in the South.

(b) The key element of new railway infrastructure appear to be a link between Tedjen (Turkmenistan) and Meshad (Islamic Republic of Iran) which is planned to be completed by the end of 1996.

The importance of this line stems from the fact that it would connect the railway networks of Central Asia and of the Islamic Republic of Iran thus providing a possibility of uninterrupted railway transportation from Central Asia to sea ports in the Islamic Republic of Iran and Turkey, as well as via Turkey to Europe. In addition, a direct long distance rail route between China and the Islamic Republic of Iran via Central Asia becomes also possible.

Another important element is on-going construction of railway connection in the Islamic Republic of Iran to the modern port of Bandar Abbas which is identified by the Iranian authorities as the main port in the country to serve the transit needs of Central Asian Republics.

It is felt therefore that the construction of the line Tedjen-Meshad as well as of the line to the port of Bandar Abbas should be given priority within the Outline Plan for the Development of Transport Sector of the ECO Region (1993) to have these two lines constructed in time as planned.

However, the completion of railway route Central Asia-Meshad-Tehran-Bafq-Bandar Abbas would require developing and introduction of proper (efficient) operational schemes and management systems.

It is apparently important therefore to undertake in 1995 a special study on operational and management aspects of the line Central Asia-Meshad-Tehran-Bafq-Bandar Abbas with particular reference to transportation of ISO and non-ISO containers and to border-crossing operations at the Iranian/Turkmenistan border.

(c) With regard to the two new proposed railway lines: Meshad-Bafq (in the Islamic Republic of Iran) and Kushka-Herat-Kandagar-Chaman (in Afghanistan), it could be noted that both lines are planned to provide competing railway routes to the sea ports in the South.

A comparative analysis of the railway routes Central Asia-Meshad-Bafq-Bandar Abbas and Central Asia - Herat - Kandahar - Chaman - Karachi could be recommended with the aim to identify a step-by-step approach (as traffic grows) for the development of the routes as integral parts of the ECO railway network.

(d) The construction of the Kerman-Zahedan line in the Islamic Republic of Iran could be also noted in terms of connection of the railway system of the country with that of Pakistan, thus providing Central Asian Republics with access to sea ports of Pakistan via railway system of the Islamic Republic of Iran, which however would depend on the development of traffic.

The construction of the Kerman-Zahedan railway link could be also considered subject to results of cost/benefit analysis and apparently after the completion of both railway lines Tedjen-Meshad and Bafq-Bandar Abbas. Rich experience of the Islamic Republic of Iran in railway construction after the completion of construction of the railway line linking Turkmenistan and the Islamic Republic of Iran, as

well as of the line to the port of Bandar Abbas, could be an important contributing factor to the success of such undertaking.

(e) As far as roads and road transport are concerned their important role in border trade would apparently remained unchanged, particularly between Kazakhstan and China (corridor east). It is however possible that road transport would continue providing services within smaller range along the new improved routes, once they are available.

A study on role of road routes from Central Asia to sea ports in the South via: (i) the Islamic Republic of Iran; (ii) Afghanistan; (iii) Pakistan (via Karakoram highway) could be recommended.

Routes to the East

As far as land transport routes from Central Asia to sea ports in the East are concerned major conclusions and recommendations are:

(a) There is only one railway route that connects Central Asia with sea ports in China which is the recently completed railway link between Kazakhstan and China, at the border-crossing points of Druzba and Alatan Shankow, and extends itself through central China (Urumqi and Lanzhou to the sea ports of Tianjing, Qindao, Shanghai and Lianyungang).

Strengthening the technical capacities of the railway line including facilities at the border as well as improving conditions for container handling are under way. Long distance railway container block train operations are considered promising.

As the railway systems of China and Kazakhstan have been interconnected in 1992 but cross-border traffic is still at the initial stage, it could be recommended that:

(i) **Action plan including rationalization of tariff structure is developed to promote cross-border railway traffic (bilateral and transit) to follow up the agreement reached between the railways of China and Kazakhstan on 4 June 1994.**

(ii) **Analysis of major problems encountered in the development of cross-border traffic since the interconnection of the railway networks is carried out, the major results of which could be important in making fully operational any new railway connections from Central Asia in general and the railway line Central Asia-Meshad-Tehran-Bafq-Bandar Abbas in particular.**

In view of the fact that the railway route China-Kazakhstan-Turkmenistan-Islamic Republic of Iran-Turkey-Europe constitutes an important route of the Trans-Asian Railway (TAR), and since TAR is a part of the ESCAP land transport infrastructure development (ALTID) project - the priority project for Phase II (1992-1996) of the Transport and Communications Decade for Asia and the Pacific - **the development of this route needs to be coordinated with the development of the other TAR routes studied by ESCAP.**

(b) Road connections exist between Kazakhstan, Kyrgyzstan and China, all leading to Urumqi, the capital of western province of China. Road transport is mainly used for border trade and provides "feeder" services to railways. In view of the distances

involved in the transportation of freight (and passengers) from Central Asia to the sea ports in China, it is expected that railway transport would remain the main transport mode.

(a) Border-crossing facilitation

(i) **Accession to the related International Conventions by the Central Asian Republics and their adjacent countries could be considered on priority basis particularly those recommended vide the ESCAP Resolution 48/11 on road and rail transport modes in relation to facilitation measures, namely:**

- The Convention on Road Traffic of 1968
- The Convention on Road Signs and Signals of 1968
- Customs Convention on the International Transport of Goods under Cover of TIR Carnets (TIR Convention) of 1975
- The Customs Convention on the Temporary Importation of Commercial Road Vehicles of 1956
- Customs Convention on Containers of 1972
- The International Convention on the Harmonization of Frontier Controls of Goods of 1982
- The Convention on the Contract for the International Carriage of Goods by Road (CMR) of 1956 as well as the Barcelona and New York Transit Conventions. As Customs services in Central Asia are in the process of being organized, the Kyoto Convention could be also included in the list.

(ii) **Conclusion of bilateral agreements between the countries, where not done already, is also recommended.** Provisions relating to protection to domestic transport may be avoided to the extent possible. Experience in Europe shows that such protectionist clauses cause delays and prove counter productive.

(iii) **Improvement at border-crossing points by way of:**

- separate check posts for passengers and cargo traffic;
- minimizing the number of check posts by combining all operations at one place; and
- creation of suitable amenities in the form of rest houses, repair shops, gasoline stations, warehouses, weigh-bridges, sign borders, etc. at border-crossings points;

(iv) **Familiarization (training) of officers and ground staff with transit rules and regulations for facilitation of traffic is very valuable especially in respect of the Central Asian Republics where Customs and Administrative services are still at their formative stage.**

(b) Multimodalism

Facilitation in movement, cost effectiveness and other benefits can be achieved by encouraging containerization and multimodalism. In addition, to accession to Conventions like Customs Convention on Containers (1972), suitable legal framework both at international and national level is necessary.

The steps to be taken should include:

- adoption of international procedures and documentation;
- streamlining of national customs and administrative procedures relating to movement, stuffing/destuffing of containers;
- encouraging the institution of multimodal transport operators and freight forwarders;
- setting up inland container depots/container freight stations with the involvement of private sector and so forth.

It is recommended to complete one full dress corridor (from the port of Bandar Abbas to CAR study to identify, and assess the relative severity of, non-physical impediments to the progress of inter-modal transport, focussing on procedures, documentation, tariff structures, international agreements for transit and other institutional and commercial bottlenecks.

(c) Use of electronic data interchange (EDI)

As EDI is becoming indispensable in international trade and transit EDI can be introduced in phased manner, Central Asia and adjacent countries may consider using computers in departments of Customs and Transport, and keep their procedures and forms simple. Improvement of related telecommunication services would be also required.

(d) Country-wise plan of action

In addition to the points already mentioned for action by Central Asia and adjacent countries, the following action points are proposed for consideration of the Central Asian countries of Kazakhstan, Turkmenistan and Uzbekistan:

- (i) Entering into transit treaty with coastline countries of the Islamic Republic of Iran, Turkey, China and Pakistan for transit cargo;
- (ii) Encouraging setting up of joint ventures of public and private sector to act as multimodal transport operators and freight forwarders;
- (iii) Formulate guidelines including customs procedures for setting up container freight stations by public and private sector organizations; also provide for single window clearance of proposals for CFSs;

Keep procedures and forms simple and upgrade quality of telecommunication to introduce EDI at appropriate stage;

- (v) Consider the setting up of National Transit Facilitation Authority to look after all transport and transit related issues and serve as focal point for relations with other governments and international bodies;

Evolve a programme for development and training of personnel engaged in transport infrastructure, multimodalism, freight forwarding, etc.

(e) Regional framework transit treaty

A comprehensive regional framework transit treaty can help in reducing several administrative, customs and liability procedures and facilitate movement within the ECO region. However, the feasibility aspect of the Treaty would need a careful consideration because of differences in: (i) transport and other systems; (ii) level of economic growth of the countries of ECO region.

A detailed study in the matter could be recommended.

7. ANNEXES

ANNEX 7.1 LIST OF COUNTRIES AND ORGANIZATIONS VISITED

Islamic Republic of Iran

Mission dates: 11-15 April 1994

Organizations visited:

Tehran:

Ministry of Economic Affairs and Finance

Office of International Organizations and Institutions

Director: Mr. Karman Khatami

Vice Minister of Economic Affairs and Finance and President of Customs Office, H.E. Mr. Vahaji

Vice President of Iran Customs Administration

Mr. Ali Kordouni

Ministry of Foreign Affairs

Vice Minister for International Affairs: H.E. Mr. Zarif

Deputy Director E.C.O. Dept., Mr. K. Sheikk-Hassani

Ministry of Roads and Transport

Vice Minister for Economic Affairs, H.E. Gheam Majnami

Director General - Roads, Dr. M. Azizi

Deputy Minister of Road and Transport

Managing Director of Ports and Shipping

Eng. Mohammad Maddad

Director General Research and Development

Mr. Hassan Taymourtash

Head of Training Department, Mr. A. Pahlavan Neshan

Vice Minister of Roads and Transport, Chairman of the Board and Managing Director of Iranian Railways, H.E. Mr. Afshar

Vice Minister, Dept. for Construction and Development of Railways, H.E. Mr. Bahrami

Managing Director, "METRA" Railways Consulting Engineers, Eng. M.E. Rostami and Chief Eng. Projects Mr. M.E. Alikhani

Economic Cooperation Organization (E.C.O.)

Deputy Secretary General, Mr. Ali Akbar Farazi

"Perse" - International Forwarding Co., Mr. K. Khalaschi

Bandar Abbas-Port

Shahid Radjaie Port Complex

Ports and Shipping Organization,

Deputy D-G "Operations", Mr. H.A. Ghalizadeh
Chah Bahar Port
Commission for Construction of Port at Chah Bahar
Representative of Minister of Housing and City Planning (3 MG), Mr. M.J.
Seyed Ahmadi

Iran-Netherlands Engineering and Development-Consultant

Managing Director, Mr. M. Banijamali
Chah Bahar Free Zone Authority
Managing Director, Mr. S. Samii
Investment Promotion, Mr. M. Lahouti

Islamic Republic of Pakistan

Mission dates: 15-22 April 1994
Organizations visited:

Islamabad:

Ministry of Communications

Director Roads and Road Transport
Eng. M.A. Iqbal
National Highway Authority
Director Planning, Eng. S.A. Latif
Director Design, Dr. Eng. J.I. Yousafzai
National Transport Research Center
Chief, Mr. M.A. Farouk; Deputy Chief, Dr. Ghais-ul-Haq

Ministry of Railways

Secretary Member, Mr. Rafique Ahmad

Karachi:

Ministry of Communications, Port and Shipping Wing

Director General, Mr. S. Aziz Siddiqi
Director Projects, Capt. Irfan-ul-Haq-Dar
National Highway Authority
General Manager (Sindh) Mr. G.N.M. Marai

Karachi Port Trust
General Manager, Planning and Development, Mr. Farooque A. Chaudhry

Port of Karachi
Port Qasim

China

Mission period: 26 April -1 May 1994
Organizations visited:

Beijing:

State Planning Commission

Transport and Energy Resources Department
Director, Mr. Li Duan Shen
Division Chief, Mr. Wang Qingyun
Foreign Affairs Department, Mr. Zhang Jian
Transportation and Telecom. Dept., Mr. Tan Xinghui
Institute of Comprehensive Transportation, Mr. Lu Shugen

Ministry of Communications

Department of Foreign Affairs
Deputy Chief International Organizations Division
Mr. Zeng Qinmin
Highway Administration
Deputy Division Chief International Cooperation Division
Mr. Dai Dong Chong
Deputy Division Chief Freight Transport Division
Mr. Weng Lei

Ministry of Railways

Department of Foreign Affairs, Mr. Yang Yulong
Transportation Bureau
Chief of Container Transport, Mrs. Fu Kui Fang

Uzbekistan

Mission dates 10-14 May 1994

Tashkent

Ministry of Foreign Affairs

Division of International Economic Relations
Deputy Chief, Mr. Isan M. Moustafaev
Second Secretary, Mr. Fariehad Khakimov

Central Asian Railways

Department of International Communications and Foreign Economic Connections
Chief of Service, Mr. Valery L. Davidovich

Road Administration of Tashkent Region "Tashkentavtoyul".

Chairman, Mr. Rustan Yunusov
Vice Chairman, Mr. K.N. Zuhurov

Ministry of External Economic Relations

International Transport Department
Senior Specialist, Mrs. Alla I. Chudakova
Firm "Central Asian Trans", International automobile
Transport, General Director, Mr. Hasein Ab. Huseinov

Central Customs Administration

Department of International Relations
Chief, Mr. Abdurashid Issakhodzaiev
Department of Customs Control, Mr. A. Khodjaev
Financial Department, Mr. E. Inagamov

The Cabinet of Ministers

State Committee of Forecasting and Statistics, Head External
Economic Relations Department, Mr. B.M. Eshonov
Head of Transport Department, Mr. O.N. Videnski
Foreign Economics Department, Mrs. M.G. Efremensko

UN Integrated Office

Mr. Khalid Malik, Resident Representative
Mr. Alisher V. Vakhidov, Chief Adviser

Kazakhstan

Mission dates 15-20 May 1994

Almaty

Ministry of Transport

Minister, H.E. Isingar, N.K.
Department of Foreign Economic Relations
Chief, Mr. Kasymov Gurar A.
Department of Automobile Transport
Deputy Director, Mr. Denisemko. A.A.

Design and Research Institute "Almaata-giprotrans",
(Railways) Deputy Director Mr. Kurenko, Y.V.
Director "Trans Asian Railways" Mr. Evgenie Ivanovich
Joint-stock company "Kazdoproject",
President, Mr. Yuri K. Komov - Professor
Statejoint-stock Company "Kazakhstan Joldari", Vice-President
Mr. Vatali N. Procentov

Ministry of Foreign Affairs

Head UN Department, Mr. Alexei Volkov

UN Integrated Office in Kazakhstan

Mr. Nigel Ringrose, Resident Representative

Republic of Turkmenistan

Mission dates: 21-24 May

Ashgabat:

The Cabinet of Ministers

Transport and Communications Department
Chief, Mr. S. Rakhmanov
Adviser, Mr. S. Yazberdyev
Motor Transport Ministry
Deputy Ministry, Mr. Rashid Turaev
Concern "Turkmenautoellari"
President, Mr. Nurmurad Kulmuradov
State Railways
Chief Engineer of Way, Mr. German G. Nerubaisky
Chief International Department
Mr. Ahmedov
Ministry of Economic and Finance
Transport and Communications Department
Chief Mr. Tagamov
Deputy Chief Mrs. Kostiyannik
State Customs House
Head of Customs Rights and Foreign
Relations Department
Mr. Pavlichenko. V.I.

ANNEX 7.2 RAILWAYS AND ROADS TECHNICAL STANDARDS AND DATA

1 RAILWAYS:

Railway track design standards in China

Structure clearance diagram - China

Structure clearance diagram - Pakistan

Basic technical and operation data:

Kazakhstan, Uzbekistan and Turkmenistan Railways

Main railways characteristics

Maximum freight density of railway sections in Kazakhstan, Uzbekistan and Turkmenistan

2. ROADS:

Road design standards in China

Road standards in Central Asian republics

Road design standards, Islamic Republic of Iran

Design standards for roads in Pakistan

Regulations for load transportation on roads in Islamic Republic of Iran

RAILWAY TRACK DESIGN STANDARDS IN CHINA

Track Class	Annual Tonnage (million tones)	Line Speed (km/h)	Minimum Radius	Number of Sleepers (per km)	Ruling Grade (%)
I Mainline	> 15	120	>1000 ⁽¹⁾ >400 ⁽²⁾	1,760-1,840	0.6 ⁽¹⁾ 1.2 ⁽²⁾
II Secondary Line	7.5-15	100	>800 ⁽¹⁾ >350 ⁽²⁾	As Class I or lower	1.2 ⁽¹⁾ 1.5 ⁽²⁾
III Local Line	<7.5	80	>600 ⁽¹⁾ >300 ⁽²⁾	As Class I or lower	1.5 ⁽¹⁾ 2.0 ⁽²⁾

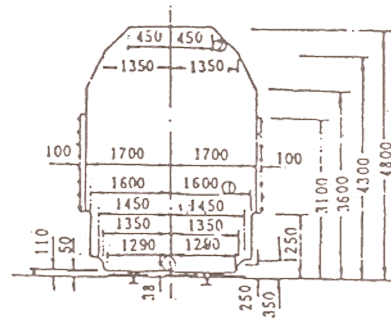
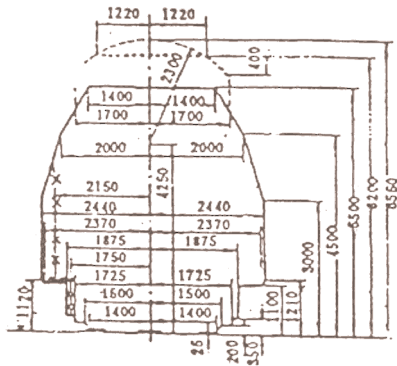
(1) General limit

(2) Absolute maximum

Source: Ministry of Railways, China

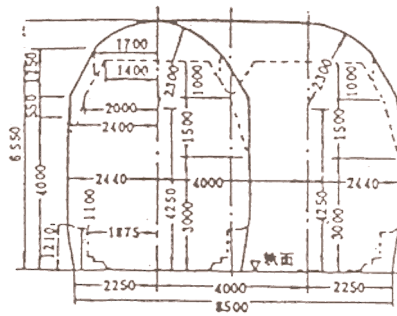
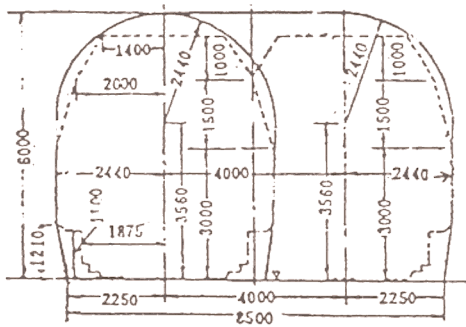
CHINA RAILWAYS

Structure clearance diagram
Car clearance diagram



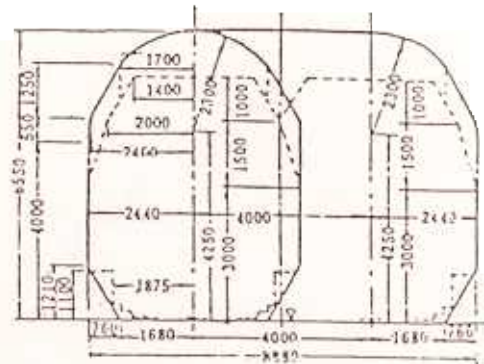
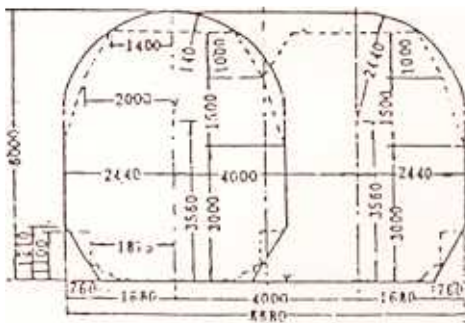
Straight line structure
clearance diagram

Rolling stock structure
clearance diagram



Tunnel structure clearance diagram
(steam and diesel traction section)

Tunnel structure clearance diagram
(electric traction section)



Bridge structure clearance diagram
(steam and diesel traction section)

Bridge structure clearance diagram
(electric traction section)

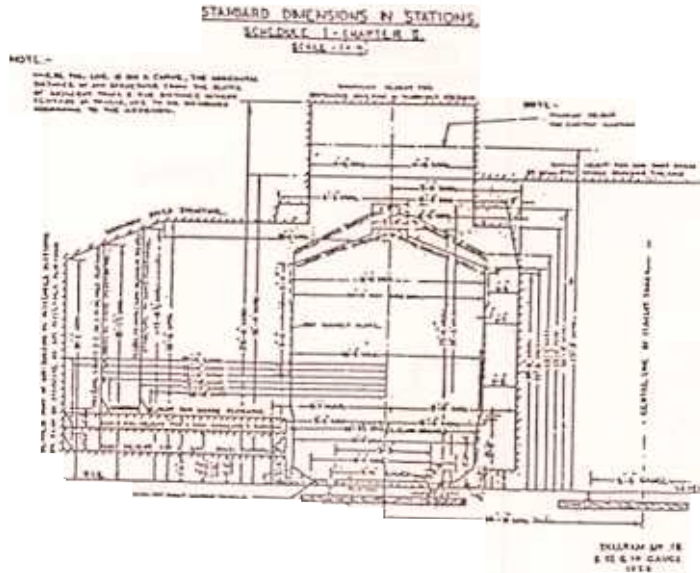
Class track and its definition

- Railway I: Annual passenger traffic volume and freight volume are over 15 mt
- Railway II: Annual passenger traffic volume and freight volume are over 7.5 mt
- Railway III: Annual passenger traffic volume and freight volume are smaller than 7.5 mt

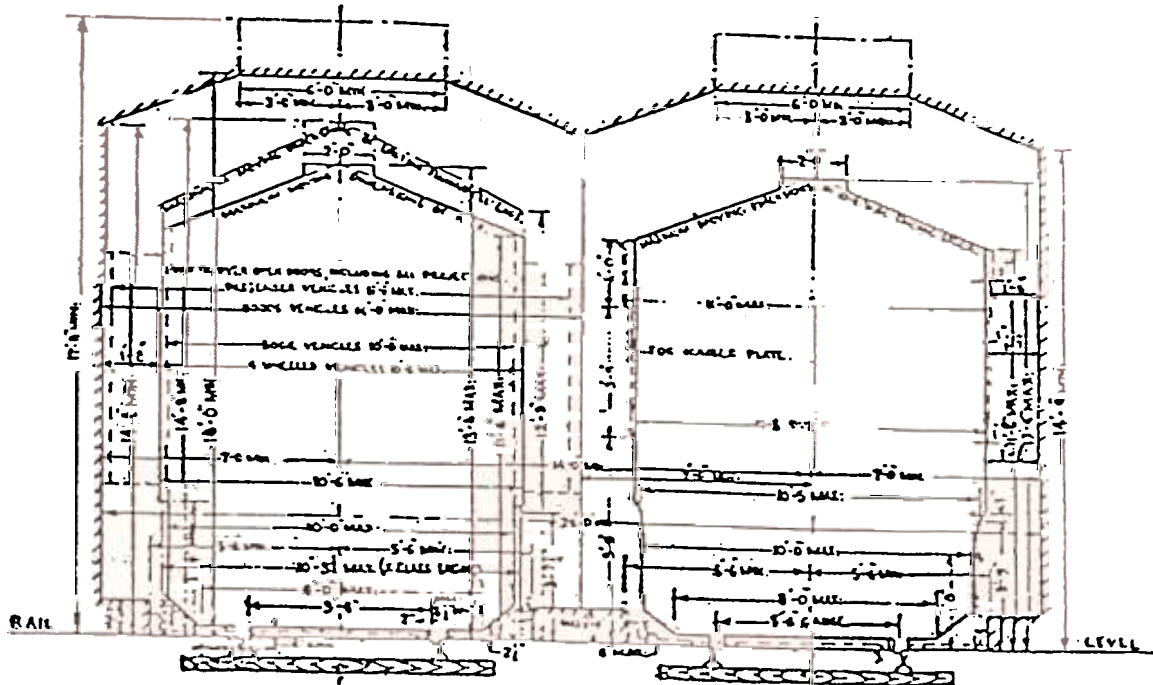
PAKISTAN RAILWAYS

Structure clearance diagram
Car clearance diagram

1) BROAD GAUGE



STANDARD DIMENSIONS OUT OF STATIONS.
SCHEDULE I-CHAPTER I
SCALE: 1"=4'



BASIC TECHNICAL AND OPERATION DATA
OF KAZAKHSTAN, UZBEKISTAN AND TURKMENISTAN RAILWAYS
(BY SECTIONS)

Sections	Number of traction	Traction mode	Weight of trains
<u>KAZAKHSTAN:</u>			
Druzba-Aktogai	1	Diesel	3,200
Aktogai-Almaty	1	"	3,600 2,700
Almaty-Chu	1-2	"	3,600
Chu-Dzambul	2	"	4,500 2,700
Dzambul-Arus-Chengeldi	2	Electric 3VL-805	
<u>UZBEKISTAN:</u>			
Chengeldi-Tashkent	2	Electric 2vI-60K	4,500 2,800
Tashkent-Dzizak	2	Diesel 2 TE-10L	4,500 2,800
Dzizak-Samarkand	2	"	3,800 3,800
Samarkand-Buhara	1-2	"	2,800 3,200
Buhara-Chardzhou	1-2	"	4,200
<u>TURKMENISTAN</u>			
Chardzhou-Mary	1	"	3,200 4,200
Mary-Tedzen	1	"	3,200 4,200
Tedzen-Seraks (Project)	1	"	3,200

MAIN RAILWAY CHARACTERISTICS

	Republics of the CIS	China	Islamic Republic of Iran	Turkey
1. Gauge: (mm)	1,520	1,435	1,435	1,435
2. Rails: kg/m)	65	50	46	50
3. Sleepers:				
- density pc/km	1,840	1,760	1,450	1,260
- made of	- wood	- metal	- metal	- Metal
	- ferro - concrete	- ferro - concrete	- ferro - concrete	- Ferro - concrete
			- Wood	- Wood
4. Ballast:	-crashed stone	-crashed stone	-crashed stone	-crashed stone
	-sand	-sand	- sand	-
5. Max. grad . %o	12	20	28	19
6. Min curv. radius, (m)	400	400	220	200
7. Max. design speed km/h - freight/ passenger trains	120	120	120	120
8. Average speed of freight trains (km/h)	40	28	N/A	N/A
9. Length of station sidings (m)	850 1050	850 1050	600 850	600
10. Weight of trains, (tons)	4000 - 6000	3000 - 4000	1200 - 1400	1000 1400
11. Traction	Electro Diesel	Electro Diesel	Electro Diesel	Electro Diesel

**MAXIMUM FREIGHT DENSITY ON SECTIONS
OF RAILWAY LINES IN KAZAKHSTAN, UZBEKISTAN
AND TURKMENISTAN (1989-1991)**

Sections	Freight Density million tkm/km per year	Pair of trains in 24 hours	
		Freight	Passenger
Druzba-Aktogai	0.7-1.0	1-2	1
Aktogai-Almaty	26.1	20-28	11
Almaty-Chu	32.8	24-32	21
Chu-Aris	66-71.6	41-63	21
Aris-Tashkent	64.1	54	21
Tashkent-Chardzhou	28.0-45.5	24-36	9-13
Chardzhou-Tedzen (Parahat)	17-19	16-19	5

The freight density on China's railways is also relatively high reaching the figure of 19.2 million tkm/km per year, while the density in Islamic Republic of Iran and Turkey is considerably lower.

ROAD DESIGN STANDARDS IN CHINA

Road Class	Design Speed ⁽¹⁾ (km/h)	No. of Carriage-ways	Carriageway Width ⁽¹⁾ (m)	Intersection Types
Expressway	120	2	2 x 7.5	All grade-separated
Motorway Class 1	100	2	2 x 7.5	Most grade-separated
Motorway Class 2	80	1	8	Most at-grade
Highway Class 2	80	1	9	All at-grade
Highway Class 3	60	1	7	All at-grade
Highway Class 4	40	1	3.5	All at-grade

(1) For roads in flat terrain Source: Highway Engineering Technical Standards, Ministry of Communications, China

ROAD STANDARDS IN CENTRAL ASIAN REPUBLICS

BASIC TECHNICAL PARAMETERS

1. Design Speed

Category of roads	Design speed km/h		
	Basic	Flat terrain	Mountains
I-a	150	120	80
I-b	120	100	60
II	120	100	60
III	100	80	50
IV	80	60	40
V	60	40	30

2. Maximum axle load

-IV Road Category 10 t
 V Road Category 6 t

3. Road Cross-Section Standards

	Road class					
	I-a	I-b	II	III	IV	V
Number of Carriageways	4; 6; 8	4; 6; 8	2	2	2	1
Width (m)	3, 7.5	3.75	3.75	3.5	3	-
Carriageway Width (m)	2x7.5 2x11,25 2x15	2x7.5 2x11,25 2x15				
Lane width (m)	3.75	3.75	3.75	2.5	2	1.75
Shoulders (m)	0.75	0.75	0.75	0.5	0.5	-
Total road crown (m)	28.5 36.0 43.5	27.5 35.0 42.5	15	12	10	8

Road design standards Islamic Republic of Iran

Classification	Wide main road	Regular main road	Secondary Road		
			1st Degree	2nd Degree	3rd Degree
Traffic volume (pcu)	<2,800	<2,800	>2,800	N.A.	N.A.
Design speed (km/h)	80	80	60	60	50
Road width (m)	13	11	9	8	6.5
Carriageway width (m)	2x3.65	2x3.65	2x3.50	2x3.25	2x2.75
Shoulder width (m)	2x3.85	2x1.85	2x1.00	2x0.75	2x0.50

Design standards for roads in Pakistan

Classification ¹		MW/EW	P-I	P-II	P-III	S-1	T-1	
Number of lanes		4 (min.)	4	2	2	2	1	
		Access controlled	Divided	Treated shoulder	Un-treated shoulder	Narrow		
Design speed (km/h)	F	120	110	100	100	80	60	
	H	90	100	80	80	60	50	
	M		80	60	60	50	35	
Planning guideline	Volume (pcu/day)	80,000	60,000	34,000	24,000	20,000	3,500	
	Level of Service	C	C	C	C	C	D	
	V/C ratio	0.70	0.70	0.70	0.70	0.70	0.85	
Typical cross section (width:m)	Carriageway		7.30	7.30	7.30	7.30	6.00	3.65
	Lane		3.65	3.65	3.65	3.65	3.00	3.65
	Shoulder	Right	3.00	2.00	3.00	3.00	3.00	2.00
		Left	3.00	3.00	3.00	3.00	3.00	2.00
	Formation		29.60 (min.)	27.60 (min.)	15.30	15.30	14.00	9.70
	Right of way		63	63	63	63	33	25
Type of pavement ²		AC/PC	AC	AC	AC/TST	AC/TST	TST/SH	

Notes 1: Classification: MW/EW: Motorway and Expressway, P-x: Primary x, S-I: Secondary, T-I: Tertiary

Topography: F: Flat area, H: Hilly area, M: Mountainous area

2: Pavement: AC: Asphalt concrete, PC: Portland cement concrete, SH: Single surface treatment, TST: Triple surface treatment

REGULATIONS FOR LOAD TRANSPORTATION ON ROADS IN ISLAMIC REPUBLIC OF IRAN

In the light of para 12 of the article 7 of the law (changing the name of Ministry of Roads and Transportation) - the following regulations are announced to be employed in road transportation as regard to the width, height, length and permissible axle loading of different types of road vehicles:

- A) The max. axle loading of a vehicle must not exceed the following limits;
1. Guide axle (two wheels) six tons
 2. Single axle (four wheels) thirteen tons
 3. Tandem axle (eight wheels) twenty tons

Notes:

- 1 Using the max, loading stated above, the size of tires must not be less than 750 x 20.
2. If the distance between two consecutive axis is less than two metres, the two axles are called Tandem axle, and if that distance is more than two metres, each axle is called a single axle.

- B) Max. weight of articulated vehicles should not exceed the following limits;

1. Combination of a truck (with two axles and six wheels) and a trailer (with two axles and six wheels) thirty tons (truck 16 tons, trailer 14 tons).
2. Combination of a truck (with two axles and six wheels) and a trailer (with three axles and ten wheels) thirty-two tons (truck 16 tons, trailer 16 tons).
3. Combination of a truck (with three axis and ten wheels) and a trailer (with two axles and six wheels) thirty-eight tons (truck 22 tons. trailer 16 tons).
4. Combination of a truck (with 3 axles and ten wheels) and a trailer (with three axles and ten wheels) forty tons (truck 22 tons and trailer 18 tons).
5. Combination of a tractor and a semi-trailer, having together three axles and ten wheels, twenty six tons.
6. Combination of a tractor and a semi-trailer, having together four axles and fourteen wheels, thirty-two tons (if the distance between the axles of semi-trailer exceeds two metres the max, permissible weight of truck and semi-trailer is thirty-six tons).
7. Combination of a tractor and a semi-trailer, having together five axles and twelve wheels, thirty-four tons.
8. Combination of a tractor and a semi-trailer having totally five axles and eighteen wheels, thirty-eight tons.

Notes:

1. The max. weight of truck or articulated vehicles should not exceed, the capacity determined in the identification card of the vehicle, or a sixth of the nominal horse power of the vehicle.
 2. When the specification card for vehicle is issued by the transport organization, that specification will be considered as a basis for the control of the vehicle.
 3. The max. weight of a truck or articulated vehicle on road from Babolsar to Bandar-Anzali should not exceed twenty six tons.
- C) The dimensions of loaded vehicles should not exceed the following limits;
- 1 Max. width: two and half metres.
 2. Max. height: four and half metres (max. height on Chalus and Haraz roads is limited up to four metres).
 3. Max. length: two axle truck: ten metres
Three axle truck: twelve metres
Combination of tractor and semi-trailer; sixteen metres
Combination of truck and trailer: eighteen metres

Notes:

1. The loading which is arranged in accordance with the above dimensions, should be in such a way as not to protrude more than fifty centimetres from the front of the truck, bus or articulated vehicles and three metres from the rear of truck, bus or articulated vehicles. The end of load protruding from the truck, bus or articulated vehicle shall be made conspicuous by means of red lights at night or red flags at day time.
2. Movement of vehicles with the above dimensions and weight on a few roads due to seasonal conditions (specially in winter) is subjected to the local declaration.
3. Vehicles having more than the above dimensions and weights are not allowed to move unless the excess cargo is loaded off.
4. Violators of the above regulations while implementing - Note No.: 3 are condemned to pay 10,000 rials and also for the damages made to the road, which will be claimed by the Ministry of Roads and Transport or affiliated departments.

5. In case where it becomes necessary to transport from one place to another, indivisible loads, whose weight and dimensions exceeds the limits prescribed, such loads must be transported by authorization of the affiliated departments of the Ministry of Roads and Transport. The authorization must be requested according to the attached form at least three weeks ahead of time. In these cases specified conditions for transporting indivisible load will be prescribed in accordance with the instructions of the affiliated departments of the Ministry of Roads and Transport. The conditions will specify; driving speed, route to be followed, necessary precautions to avoid collisions and damages to the road and bridges, etc. Instruction regarding transportation of load of this nature will also be communicated to security authorities and relative organization who will ensure that the conditions prescribed for transportation are carefully observed.

**ROUTES AND DISTANCE BETWEEN BORDER-CROSSINGS OF ISLAMIC REPUBLIC
OF IRAN AND TURKMENISTAN AND BANDAR ABBAS, CHAH BAHAR PORTS**

1.	Loftabad-Meshad-Zahedan-Chah Bahar	1,925 km
2.	Badjigiran-Meshad-Zahedan-Chah Bahar	1,858 km
3.	Seraks-Meshad-Zahedan-Chah Bahar	1,832 km
4.	Loftabad-Meshad-Gonabad-Ravar-Kerman-Sirjan-Bandar Abbas	1,562 km
5.	Badjigiran-Meshad-Gonabad-Ravar-Kerman-Sirjan-Bandar Abbas	1,495 km
6.	Seraks-Meshad-Gonabad-Ravar-Kerman-Sirjan Bandar Atras	1,469 km
7.	Loftabad-Meshad-Tabas-Yazd-Anar-Sirjan Bandar Abbas	1,938 km
8.	Badjigiran-Meshad-Tabas-Yazd-Anar-Sirjan Bandar Abbas	1 871 km
9.	Seraks-Meshad-Tabas-Yazd-Anar-Sirjan Bandar Abbas	1,845 km
10.	Incheborum-Minudasht-Meshad-Zahedan-Chah Bahar	2,190 km
11.	Incheborum-Azadshahr-Shahrood-Tehran-Anar-Bandar Abbas	1,910 km

Cost of cargo transportation from Chah Bahar to Seraks (Based on the price of cargo transportation from Chah Bahar to Meshad):

580,000 Rs. For trailer

570,000 Rs. For container

570,000 Rs. For truck (10 wheels)

1 \$ equals 2,500 Rs.

ANNEX 7.3 LAND TRANSPORT OVERVIEW BY COUNTRIES

CHINA

Area: 9,597,000 km².

Population 1,143 m.

Railways: Railways are a major part of the transportation system, carrying 45.8% of all passenger transport and 39.2% of all cargo in 1990. In 1992 the length of railway network (gauge: 1,435 mm) was around 54,000 km (of which 7,800 km were electrified). With the exception of Tibet (high mountains area), every province and region is connected to the rail system. New railways are being added to the system every year at a significant rate to relieve pressure on the heavily loaded trunk routes in the east of the country, and to extend into western provinces which have little rail transport. The target is an 80,000 route-kilometre network by the year 2000, including about 20,000 route-kilometres (25%) of electrified lines.

In 1990 there were 6,279 steam, 5,580 diesel and 1,430 electric locomotives of total 13,592. Annual locomotive production averages about 650 but is insufficient to keep pace with demand and allow life-expired steam and diesel locomotives to be scrapped.

China's freight wagon fleet totals 365,000 and is dominated by the general all purpose open wagons; there is only small number of special purpose wagons. The average capacity of the wagon fleet is around 55 ton per wagon. Railways in China suffer from severe shortage of transport capacity.

The railway transport policy is to make the railways to be the main Asia-Europe "land bridge" carrier via China thus encouraging and attracting international container transport.

China has at present four railway border-crossings: two with the Russian Federation (Manzhouli and Suifenhe); one with Mongolia (Erenhot); and one with Kazakhstan (Alatan Shankow). These railway lines make the 3 corridors connecting China with Europe via the Russian Federation, Mongolia and Central Asia.

The Central Asian corridor was opened in 1992, providing the shortest rail link from the port of Lianyungang through Central China-Urumqi to Alatan Shankow Pass/Druzba (Kazakhstan), branching-off to the North (the Russian Federation) to Kazakstan, Uzbekistan and Turkmenistan and onward to the Islamic Republic of Iran, Turkey and Europe (subject to completion of the missing link).

Roads: By the end 1991 official figures put the national highway network length at 1,041,136 km. More than half of this is are earth roads and other roads are not all very good. There is only approximately 1,000 km of good highways. Most of the highway network is concentrated in the heavily populated eastern coastal areas, whereas road transport in the less developed areas is still a major problem. By the end of 1991 China had 6.1 million passenger vehicles, of which 960,399 were owned by individuals.

While the road sector in China is well organized institutionally, the main question is how to rweet the needs of the rapid development of road transport expected in future year~ China faces major expansion of the road system, in contrast to developed countries where new road development is minimal and the major effort is on maintenance and upgrading.

China has 43 road border-crossing points with its neighbours. The main border-crossings in western China, considered for the purpose of this study are: Maikapchagay, Bakhty, Druzba and Khorgos (with Kazakhstan), Torogart (with Kyrgyzstan) and Kushka (Kashi)-Khunjerab (Hongzilapu) via Karakoram Highway with Pakistan.

Road transport has mostly provincial importance around border-crossings in China's western province. Roads are serving as feeders to railways which are the main cross-country carrier. The road from Urumqi to Kashi (Kashgar) with its links to Pakistan and Kyrgyzstan will remain as the major land transport road corridor in this part of China providing capital-to-capital and sea port links to neighbouring countries.

Ports: China has envisaged four main ports to serve the land transport needs of Central Asia: Lianyungang, Tianjin, Qindao and Shanghai.

The designated port to serve the container transport needs of the Central Asian region is the port of Lianyungang at the bridgehead of the east end of Euro-Asia land bridge situated at the Haizhou Bay of the Yellow Sea. The port is engaged in coal, bulk cargoes and container transport. Two 25,000 dwt capacity container berths have been completed with the annual handling capacity of 200,000 containers. The port of Lianyungang has a 100,000 m² container yard and 27,000 m² of storage space. An expansion of two container berths is planned up to the year 2000. It is linked by a special railway line to the Lianyungang Lanzhou main railway line. The other above-mentioned ports are all linked with the main land-bridge railway line.

The port of Tianjin has 7 container berths with total capacity of 600,000 TEU. By the year of 2000 capacity will be increased to 1 m TEU.

The port of Qindao has 2 container berths with present capacity of 300,000 TEU, to be increased to 900,000 TEU by year 2000.

The port of Shanghai is the largest, with 7 container berths, capacity of 500,000 TEU; and with converting 5 conventional berths to container total capacity is 1 m TEU. Two new container berths (total capacity of 1.4 m) are under construction. Until the year 2000 total capacity will reach 2 m TEU.

China ports will have sufficient capacity to meet future transport needs of the Central Asian subregion.

KAZAKHSTAN

Kazakhstan occupies an area of 2.7 million km², stretching from the Caspian Sea to China, making it the largest CAR in terms of land area. With a population in 1991 of 16.7 million (6.1 per km²) it is one of the most sparsely populated regions in the world. The country borders Turkmenistan, Uzbekistan and Kyrgyzstan in the south, and is bounded by the Volga River, the Ural Mountains and the west Siberian region of the Russian Federation in the north. Kazakhstan has a common border in the east with the Xinjiang Province of China and reaches west to the Caspian Sea. The country is rich with natural resources. It is an important producer of gold, iron ore, coal, copper, chrome, wolfram and zinc. The country is a producer and net exporter of oil and gas. Its industry is dominated by mining and related processing activities.

Transport is of critical importance for the functioning of the economy. The railways form the backbone to Kazakhstan's transport system. In 1991 it carried 90 per cent of the freight (ton km), while passenger traffic was more equally divided between road (50 per cent), rail (30 per cent) and air (20 per cent).

Within the countries of the former Soviet Union, Kazakhstan Railways (KZR) is the third largest after the Russian Federation and the Ukraine, with 13,600 route km of which 5,500 km are double track and 4,000 km are electrified. It's fleet comprises 3280 locomotives and it has a passenger stock of 2685 coaches.

The railways are suffering from a severe shortage of spare parts and permanent way materials (mainly sleepers and fasteners), which in the past were predominantly supplied by the USSR. One third of the railway network is in complete overhaul, and repair facilities of locomotives and rolling stock are in poor condition. The situation is made more difficult by the fact that 95 per cent of spare parts, workshop equipment and rolling stock originates from outside Kazakhstan (mainly the Russian Federation and Ukraine). Plans are therefore way to set up own repair/maintenance workshops and wagon manufacturing plant.

The present railway network provides a main line south of Kazakhstan - the Central Asian Railway route (Almaty - Dzambul - Chimkent - Tashkent - Ashgabat), with lines to north: Almaty - Aktagai - Semipalatinsk - Barnaul and Omsk; Almaty - Balkash - Karaganda - Ufa; Shimkent - Kizyl Odra - Aktyubinsk - Uralsk; and, Beyneu - Atyrao - Astrakhan).

Kazakhstan railways are mainly concentrating on upgrading the existing infrastructure by electrification of lines, improving the signalling system and safety. In spite of present decline of traffic volumes, railways will play a key role in future development. The railway network however needs adjustments. Previous lines were north-south oriented, horizontal lines are missing. To utilize the mineral resources of the country new railway lines are proposed to link central Kazakhstan with the South. With the opening at Druzba station in 1991 of the railway line with China, the Kazakhstan railways are permanently involved in strengthening the capacity of the new section incorporated into the network. Railway services are provided at present on the temporary basis due to limited capacities. It is a 150 km single line, not electrified. Because of break-of-gauge, change of wheels are necessary on wagons. Passenger trains operate two times a week between Almaty and Urumqi. The journey takes 36 hours, including 2 hours for change of wheels and customs formalities. Freight traffic needs transloading at border stations and services are limited to Kazakhstan and western China only. A railway line between Aktogai and Sayak is completed to link with Trans Siberian route, avoiding Almaty.

The railway route from Druzba border-crossing station - Aktogai - Almaty forms the Central Asian Railway corridor via Kazakhstan, Uzbekistan and Turkmenistan to Islamic Republic of Iran, to Turkey and Europe. With the completion of the missing link Tedzen - Seraks - Meshad the corridor will be operational after 1996.

Roads: Freight transport by road is done by a fleet of 400,000 vehicles, including tractors and other farm vehicles. However, all vehicle fleet is inadequate in terms of availability, capacity, reliability and total number. Lack of spare parts (especially from Russia and Belarus) has led to considerable restrictions in long distance operations. Kazakhstan has no truck manufacturing capacity of its own.

Road infrastructure is adequate in general, but maintenance is lacking partly because of shortage of maintenance equipment, and partly due to the lack of pavement design capacity and materials testing facilities.

Ninety per cent of roads have been designed for axle load of 6 tons, some up to 9 tons. Trucks on roads are overloaded, causing road damages and maintenance problems.

Road transport regulations are presently either nonexistent, or follow the ones established in the former Soviet Union.

Overall, freight transport volumes dropped by about 10 per cent between 1990 and 1991. The decline in traffic was even sharper in 1992, when traffic on volumes railways of about 20 per cent. The decline for road and air traffic was somewhat smaller, between 5 and 10 per cent. The main reason for the drop in traffic was the lower demand from Russia for coal and other raw materials produced by Kazakhstan.

The road development policy of Kazakhstan is to improve the technical standards of existing road infrastructure and provide links with the neighbouring countries. Links to the north, with the Russian Federation and Europe are provided through the following highway corridors:

Almaty - Shimkent - Aktubinsk - Uralsk - Moscow
Aktyubinsk - Atirau - Astrahan
Almaty - Karaganda - Kustamay - Chelyabinks
Almaty - Kokshatar- Petropalovsk - Omsk - Novosibirsk
Almaty - Semipalatinsk- Barnaul

Links with the neighbouring countries Uzbekistan, Kyrgyzstan, Turkmenistan and Tajikistan are relatively good, although some road sections, due to inadequate technical standards can not carry intensive traffic volumes.

On wider subregional basis, in parallel with the development of economic relations of CIS with Turkey, Islamic Republic of Iran, Pakistan, China, as well as with other countries, there is a need to establish a unified transport system, along with necessary facilitation services.

At present Kazakhstan has 6 road border crossing points with China: Narinkol, Kolzat, Horgos, Druzba, Bakhty and Maykapchangay. Road link with Mongolia is established via the Russian Federation at Tashanta border crossing point. Road transport is mainly serving the local needs and border trade of east Kazakhstan and west China provinces.

UZBEKISTAN

Uzbekistan has an area of 447,000 km² with population of 21.7 million, making it the most populous Central Asian republic. The country has substantial natural resources. There are large reserves of petroleum, natural gas and coal, and there is considerable potential for hydropower. There are also substantial deposits of gold, silver, copper, lead, zinc, wolframite and tungsten.

Trade has been an important feature of the economy of Uzbekistan. Cotton exports accounted for more than 30 per cent of total inter-republican exports, although exports of machinery, textiles, agricultural and aviation equipment, and fertilizers were also important. In foreign trade, the specialization in cotton is more conspicuous, representing about 84 per cent of exports in 1991. Regarding import, food, grains, sugar and petroleum products dominated inter-republican trade; foodstuffs, raw materials and consumer goods accounted for about 90 per cent of foreign imports in 1991.

The economy is transport intensive, and rail transport was the most extensive used mode in the past. A current decline in traffic volume is about 30 per cent. The demand for services however is expected to grow, and consequently road transport and the use of containers are likely to grow too. Controversially, the modal share of rail transport may be expected to decline for short distances.¹¹

Land transport sector is of vital importance to this land-locked country. Distances to potential export-import markets are very long (for example, about 3000 km to the Black Sea, 3,500 km to Moscow, and about 5,000 km to the main Chinese ports). Therefore transport costs only take a share of more than 16 per cent of the selling price of products (cotton for example, sold in Europe). Because all land transport routes include transit through several countries the Uzbekistan economy highly depends on the political stability and performance of the transport systems of these countries.

Being that the case, the government, concerned with its international transport links, has made it a priority to ensure that the country has access to several alternative routes (road, rail and multimodal). Currently, the existing rail, and to some extent road systems of CIS and China, appear to be fulfilling international transport requirements satisfactorily in the short and medium term.

Uzbekistan has a relatively well developed transport system adopted to its geography and topography. The present railway network in operation is 4,234,7 km (1,520 mm gauge), of which 350 km (8.2%) are electrified. Due to country's problem to provide oil derivatives (diesel fuel) the railways are planning to electrify all main lines. It will also provide more efficient service in the Central Asian Railway system when it becomes fully operational after 1996. However a decline of transport volume moved by rail is permanent since 1989, and the forecast is not encouraging either:

<u>Past:</u>		<u>Forecast</u>	
<u>Year</u>	<u>M.t. km</u>	<u>Year</u>	<u>M.t.km</u>
1989	78,716	1997	41,250
1990	76,800	1998	41,700
1991	72,404	1999	42,100
1992	50,634	2000	42,521

There are 11 railway terminals to handle 20 foot containers (40 foot containers are not in use due to lack of technical equipment).

Technical capacities on the main line enable traffic of 10-20 pairs of passenger trains and 25-50 pair of freight trains per day. At present there is plenty of available capacity. The maximum speed on main lines for passenger trains is 100 km/h, and for freight trains 80 km/h.

Uzbekistan-Central Asian Railway lines are facing serious maintenance problems due to lack of maintenance workshops. Ten per cent of the freight stock is out of use. New depots and maintenance workshops are being built to ease the present problem.

The railway network provides links with Kazakhstan and Turkmenistan (the main line Almaty-Tashkent-Samarkand-Bukhara-Ashgabat-Krasnovodsk). It is the very central portion of the Central Asian "Trans Asian Railway line". Railway links are also provided north to Kazakhstan, south (via Termez) to Afghanistan (Galaba-Hairaton) Tajikistan and Kyrgyzstan.

The **Road** network of Uzbekistan consists of 40,000 km of public roads, out of which 2,200 km are 4 lane highways providing good links to neighbouring countries. (Tashkent-Samarkand-Bukhara to Turkmenistan and Islamic Republic of Iran - 4 lanes; Bukhara-Nukus, border with Kazakhstan-north, and the Russian Federation - 3 lanes).

The road network of Uzbekistan can carry transit of goods and passengers from Iran to CIS and China originating from the following routes:

Termez-Dushanbe; Termez to Afghanistan; Termez-Karshi-Bukhara-Nukus then Kazakhstan and the Russian Federation; Termez-Samarkand-Tashkent-Bishkek (Kyrgyzstan) and Almaty-Urumqi (China); Termez-Samarkand-Tashkent Andidjan-Osh (Kyrgyzstan) - and Kashgar (China); Bukhara-Kizil-Orda (Kazakhstan) - then to the Russian Federation; Bukhara-Samarkand-Tashkent -then cities of Tajikistan, Kyrgyzstan, Kazakhstan and the Russian Federation; Bukhara-Ashgabat to Meshad (Islamic Republic of Iran). and from Tehran-Gorgan-Ashgabat-Nukus -then to Kazakhstan and the Russian Federation.

The details of the main road routes to neighbouring countries are given in the following table:

Section	Border point	Distance	Lanes	Width (m)
1. M-34 Tashkent-Termez (Uzbekistan-Tajikistan)	Termez	160	2-4	7-15
2. M-37 Samarkand-Ashgabat-Krasnovods (Uzbekistan-Turkmenistan)	Farap	363	2-4	7-15
3. M-39 Almaty-Frunze-Tashkent (Kazakhstan-Uzbekistan-Afgan.)	Termez	681	2-4	7-15
4. M-41 Frunze-Dushanbe-Termez (Uzbekistan-Kyrgyzstan)	Termez	178	2-4	7-15
5. A-373 Tashkent-Osh (Uzbekistan-Tajikistan)	Osh	398	2-4	7-15
6. A-376 Kokand-Dzizak (Uzbekistan-Tajikistan)	Kazbadam-Nau	165	2-4	7-15
7. A-377 Samarkand-Ayniy (Uzbekistan-Tajikistan)	Pendzikent	37	2-4	7-15
8. A-381 Nukus-Tashauz (Uzbekistan-Turkmenistan)	Hodzeyli	42	2-4	7-15

Roads in general need upgrading to higher standards and require proper maintenance. Road design, maintenance and supervision are identified as areas for manpower training.

Uzbekistan is attaching great importance to road connections to sea ports in the South. The priority is given to the route from Termez via Afghanistan-Herat-Kandahar-Quetta-Karachi (Pakistan). The second option is: Tashkent-Samarkand-Bukhara-Mary (Turkmenistan) - Herat (Afghanistan)-Kandahar-Karachi (Pakistan), or Seraks, Meshad (Islamic Republic of Iran) to ports of Chah Bahar and Bandar Abbas.

Once the Afghanistan issue is settled, a road and railway project linking Afghanistan, Pakistan and India will likely be promoted.

The construction of the railway line Tedzen-Seraks (to the Islamic Republic of Iran) is also highly promoted and Uzbekistan is actively participating in construction of the railway line which will connect Uzbekistan with Europe through the Islamic Republic of Iran and Turkey, and in the east, through Kazakhstan, with ports in China.

The transport sector with its existing infrastructure needs rehabilitation and replacement of assets. There is also a need to improve management of the transport sector.

TURKMENISTAN

Although Turkmenistan has an area of 488,000 sq.km., and is the second largest among the Central Asian republics, the Kara Kum desert occupies almost 90 per cent of its area, leaving the remaining ten per cent inhabited by 3.5 million people, making Turkmenistan the smallest republic in terms of population.

Turkmenistan's economy is highly dependent on the production and processing of energy resources and cotton. The country is rich in natural resources. Cotton is the dominant crop grown in the country, accounting for more than 50 per cent of the nation's arable land and 60 per cent of total agricultural production in 1991.

The specialized orientation of Turkmenistan's production, and the consequent openness of the economy, makes the nation particularly vulnerable to external shocks, as evidenced by the serious economic consequences stemming from the disruptions to inter-republican trade over the past three years. The ratio of exports to net material product was 57 per cent in 1991, and the corresponding ratio for imports exceeded 50 per cent; inter-republican trade represented over 80 per cent of total trade in 1991. Exports were largely dominated by gas and oil, as well as for light industrial goods, mainly cotton fibre. As regards to imports, the main items of inter-republican trade were machinery and metal works, light manufactured goods, and processed foods, whereas the major components of imports from the rest of the world in 1991 were products of light industry and food industry.

Transport: The land transport system in Turkmenistan comprises of 13,597 km of public roads (88% with hard surface). National highways account for 6,458 km and there is 2,136 km of railways. The main railway line starts from Krasnovodsk through Ashgabat and Mary, then runs to the south of the Kara Kum desert, connecting with Buhara (Uzbekistan). The road system to the west is supplemented by a ferry link with Baku through the Caspian Sea. This ferry links the country to the Mediterranean Sea through the Black Sea and the Bosphorus Strait. The strategic Krasnovodsk port plays an important role in surface transport for Turkmenistan as well as for other land-locked CAR. Additional facilities at Krasnovodsk are being constructed, including dry cargo bulk load (for grains) jetties and warehouses. Highway and railway links to Iran are being built, and a new highway connecting Chardzhou with Mazar-i-Sharif (Afghanistan) was opened in late 1991. A railway line is under construction, which would provide the missing section (Tedzen-Seraks-Meshad) of the transcontinental railway line linking China through Central Asia to Europe.

The main **railway** line starts from Krasnovodsk (now Turkmenbashi) - Chardzhou Dashovuz, further north to Kungrad and Beyneu, providing link to Uzbekistan, Kazakhstan and the Russian Federation. Railway lines: Mary-Gusgi (Kushka) and Buhara-Kerkichi-Termez are providing links to Afghanistan.

Due to the demand for railway transport services from restructuring national economy, new railway construction (total 1,800 km) is taking place on the following sections:

Tedzen-Seraks-132 km, Gazandzik-Giziletrek 225 km, Gazandzik-Gizilgaya 170 km, Chardzhou-Kerki 215 km, Keneurgench-Kernay 67 km and Krasnovodsk-Kulisol-Bekdash 400 km.

It is also planned to extend the network from Bekdash to Yeralievo (Kazakhstan) 250 km, Gizilgaya-Keneurgench 400 km, Nebitdag-Cheleken 100 km and Kerki-Tagtabazar 400

km, to complete a national railway network and provide international links north and south. In order to upgrade the capacity and efficiency on the main lines an electrification programme is laid down (2,400 km) for the following lines: Krasnovodsk (Turkmenbashi) -Ashgabat-Mary-Chardzhou-Tahiatash, Gazandzik-Giziletek, Chardzhou-Farap, Chardzhou-Kerki and Tedzen Seraks.

In this very ambitious programme the priority is given to Tedzen-Seraks-Meshad line which is to link railways from both sides (Islamic Republic of Iran and Turkmenistan) in Seraks by end of 1996.

Completion of this section will provide the long time expected connection from Far East, China and Japan to Middle East countries of Asia, Mediterranean region and Europe through Islamic Republic of Iran and Turkey. The whole Central Asian railway line will link the ports of China and Beijing, via Alatan Shankow and Druzba stations, Almaty, Tashkent, Mary, Seraks, Meshad, to Tehran and Istanbul, which means for all CAR access to world markets.

The Tedzen-Seraks-Meshad missing railway link is constructed with the joint effort of the following countries: Turkmenistan, Kazakhstan, Uzbekistan, Kyrgyzstan and the Islamic Republic of Iran.

By now a good progress is reported: 109 km of earth base is completed, 70 km of rails are laid, the first station (Gulang) is under completion, a bridge is completed via the Hauzhanskiy channel, and construction of another road-rail bridge via Karakumskiy channel (142 m long), along with other small bridges and passes, are under way. At the border a combined rail-road bridge is to be constructed by the Iranian side.

Considering the future development of trade flows in the Near East, Central Asia and Far East countries, another important railway link is identified between Turkmenistan and Islamic Republic of Iran via Gazandzik-Gizilatrek-Bandar Torkmen (approximately 330 km). This railway link may open a new shorter corridor to Europe, Persian Gulf and the South-West Asian subregion.

The potential north-south railway corridor: Yerahievo-Bekdash-Krasnovodsk-Gazandzik-Gizilatrek-Bandar Torkmen will connect the Russian Federation, Ukraine, Kazakhstan, Turkmenistan and Islamic Republic of Iran.

The construction of the Chardzhou-Kerki-Kerkichi line in the south-east part of Turkmenistan (215 km long line and 2 km long bridge at Amur Darya River) will provide connection from south Uzbekistan, Tajikistan and Turkmenistan north bound to Beyneu (north Uzbekistan and Kazakhstan). The existing Mary-Kushka and planned Kerkichi-Taktabazar railway line, near the Afghanistan border, will provide future links to Afghanistan and Peshawar in Pakistan.

At present the railway line from Kushka to Turgundi extends 5 km to Afghanistan with a freight transport (1992 figure) of 88,500 tons and 16,720 tons in containers.

It appears from above that Turkmenistan has a key linking position in the east-west and north-south corridors.

Roads: At present the government is supporting road transport for immediate and mid term development of the entire economy. Most of the freight and passenger traffic moves by road.

Traffic forecasts also count on intensive use of road transport in domestic and international trade movement.

Development plans for highway infrastructure up to year 2010 envisage construction and reconstruction of 2,480 km of highways at an estimated cost of US\$ 1.0 billion in 1994-2005 period. It will include road upgrading to first category in industrial cities and of the international highways, such as:

- 40 km section Ashgabat-Gaudan-border with Islamic Republic of Iran; US\$ 18 million is provided for upgrading to category III. Works are expected to be completed in two years time. Islamic Republic of Iran has also plans to improve the section from their side to improve connection via this border-crossing;

- reconstruction of Tedzen-Seraks road, upgrading to second class category (107 km), at approximate cost of US\$ 30 million;

- construction of a 320 km motorway between Ashgabat and Mary (first class-category), at approximate cost of US\$ 300 million;

- construction of a road/railway bridge (900 m) crossing Amur Darya River at Chardzhou at approximate cost of US\$ 180 million. At present vehicles are using a floating (pontone) bridge. The volume of traffic is however still too low to justify construction of a permanent bridge.

Turkmenistan has four road border-crossing points with Iran: Gaudan, Gudriolum, Seraks and Artik (Loftabad). The Gaudan-Bajjigiran (Islamic Republic of Iran) border-crossing is the most frequently used and considered as the main future link. Daily traffic is 150-200 trucks and 8-10 buses. No containers are moving at this border-crossing due to sharp road bends in the mountains.

The Artik-Loftabad border-crossing is opened recently mainly for Turkish trucks. The Gudriolum-Incheborum border-crossing is an old road of IV category, intensively used by heavy trucks from north corridor (Kazakhstan and the Russian Federation). Containers are transported on this route too. The road from Gudriolum to Kizil Atrek, Kizil Avrat and Kizil Atrek-Kum Dag needs improvement and upgrading to category three and two.

The Seraks road border-crossing is not in full operation. The road from Turkmenistan side is completed, but the completion of a counterpart road section from Iranian side is expected in 1995.

Turkmenistan is not yet a member of TIR Convention, which is causing problems in transit traffic in neighbouring countries.

These are also 3 border-crossing points with Afghanistan: Kushka, Imam Bandar and Tahta Bandar. Due to the present situation in Afghanistan their use is limited.

DISTANCES - Turkmenistan Railways

	ASHGABAT	Gizilatrek	517 km
		Krasnovodsk	555 km
		Seraks	399 km
		Kushka (Gushi)	658 km
		Farap	594 km
		Tahiatash	1107 km
II.	GIZILATREK	Krasnovodsk	488 km
		Tahiatash	1624 km
		Farap	1111 km
		Kushka (Gushi)	1175 km
		Seraks	916 km
	SERAKS	Tahiatash	972 km
		Farap	459 km
		Kushka (Gushi)	523 km
		Krasnovodsk	954 km
		Gizilatrek	916 km
	KUSHKA (GUSHI)	Tahiatash	1079 km
		Farap	567 km
		Krasnovodsk	1213 km
		Seraks	523 km
		Gizilatrek	1175 km
	KRASNOVODSK	Gizilatrek	488 km
		Kushka	1213 km
		Seraks	954 km
		Farap	1149 km
		Tahiatash	1662 km
III.	FARAP	Chardzhov	8 km
	Chardzhov	Tahiatash	521 km
	Chardzhov	Mary	243 km
	Mary	Kushka	315 km
	Mary	Parahat	76 km
	Parahat	Seraks	132 km
	Mary	Ashgabat	343 km
	Parahat	Ashgabat	267 km
	Ashgabat	Gazardzik	292 km
	Gazardzik	Gizilatrek	225 km
	Gizilatrek	Krasnovodsk	263 km
IV.	DISTANCES BETWEEN CONTAINER TERMINALS		
	Dashavuz	Chardzhov	464 km
	Chardzhov	Marh	255 km
	Mary	Ashgabat	365 km
	Ashgabat	Krasnovodsk	545 km

DISTANCES AND TIME OF RAILWAY TRANSPORT (KM-DAYS)

Turkmenistan Railways

KM/DAYS	KRASNO- VODSK	GAZARDZIK	GIZILA- TREK	ASHGABAT	PARAHAT	SERAKS	MARY	KUSHKA	CHARDZHOU	FARAP	DAS- HOVUZ	TAHIATASH
KRASNOVODSK	-	263 1	488 2	545 2	822 3	954 3	838 3	1213 4	1131 4	1149 4	1595 5	1662 5
GAZARDZIK	263 1	-	225 1	282 1	559 2	691 2	635 2	950 3	863 3	871 3	1327 4	1384 4
GIZILATREK	488 2	225 1	-	517 2	784 3	916 3	860 3	1175 4	1088 4	1111 4	1560 5	1624 5
ASHGABAT	545 2	282 1	507 2	-	277 1	409 2	353 1	668 2	596 2	614 2	1078 4	1117 4
PARAHAT	312 3	559 2	784 3	277 1	-	132 1	76 1	391 1	319 1	327 1	791 3	348 3
SERAKS	945 3	691 2	916 3	409 2	132 1	-	208 1	523 2	451 2	459 2	923 3	972 3
MARY	888 3	635 2	860 3	353 1	76 1	808 3	-	315 1	243 1	251 1	715 3	772 3
KUSHKA	1213 4	940 3	1175 4	668 2	391 1	523 2	315 1	-	558 2	566 2	1030 4	1079 4
CHARDZHOU	1131 4	863 3	1088 4	596 2	319 1	451 2	243 1	558 2	-	3 1	464 2	521 2
FARAP	1149 4	871 3	1111 4	614 2	327 1	459 2	251 1	566 2	3 1	-	472 2	529 2
DASHOVUZ	1595 5	1327 4	1560 5	1078 4	791 3	923 3	715 3	1030 4	464 2	472 2	-	57 1
TAHIATASH	1662 5	1384 4	1624 5	1117 4	848 3	972 3	772 3	1079 4	521 2	529 2	57 1	-

ISLAMIC REPUBLIC OF IRAN

Railways: Network: 4,473 km, Gauge: 1,435 mm, (1,676)

Iranian railways key routes start from the ports of Bandar Khomeini and Khorramshar on the Persian Gulf to Tehran; and northwest to Razi on the Turkish, and Djolfa on the borders of the Former USSR. The electrified part is the 145 km section of the route to the former USSR, from the Tabriz junction to Djulfa. From Tehran lines radiate southeast to Bafq and Kerman. Further to the southeast there is a 94 km different gauge line from Zahedan to the Pakistan border at Mirjaveh. The line from Tehran to north-east leads to Bandar Torkmen and Meshad. These lines are not fully used and have excess capacity. Maximum axle load on the network is 20 t (Bafq-Bandar Abbas section: 25 t).

New lines: Early in 1992 the 1,700 km of new railway was under construction. A further 5,000 km had been a subject of a feasibility study. Construction of a new 709 km line from Bafq to Bandar Abbas, to connect the port of Shahid Rajai and the copper and iron ore mines of Golegozar area to the existing railway network, began in 1982. The first 260 km, from Bafq to Sirjan, were opened to traffic in May 1990. The remaining infrastructure development and tracklaying progressed in 1992. Initially laid as a single track, the line will eventually be double-track, electrified and CTC-controlled. A fleet of 1,200 axle wagons of large capacity (25 t) has been delivered for use on this line which, apart from connecting the port of Rajai to the network, will also be used for the transportation of iron ore from the inland mines to the steel complex of Mobarekeh in Isfahan.

The next new line to be constructed is a 180 km connection from Meshdad to Seraks, on the Turkmenian frontier. This will create a route from the Persian Gulf to Central Asia, the crucial missing link in the Trans-Asian railway system.

In 1991 agreement was reached with Pakistan Railways to undertake joint construction of a 375 km line from Kerman to Zahedan, which is presently the terminal railhead of a 1,676 mm-gauge cross-border line from Pakistan.

Other ongoing infrastructure projects: Construction of marshalling yards at Ghom and Aprin, and of bypasses at Ghom and Tehran, is progressing. Doubling of track proceeds on lines where limits of capacity have been reached along the Tehran-Ghom (180 km) and Ahwaz-Bandar Khomeini (120 km) sections. To improve the availability of wagons and locomotives, a locomotive repair shop has been set up at Bafq.

Traction and rolling stock: In 1990 the motive power fleet consisted of 523 diesel electric, eight electric locomotives, four Turbo trains and a fleet of 13,312 freight wagons.

Railway distances from Seraks to: Port Bandar Abbas-2,552 km; Bandar Imam-1980 km, border-crossing with Turkey (Razi) 2,010 km, and Azerbaijan (Jolfa) 1,936 km.

Roads: The total length of the road network is about 105,000 km of which about 20,000 km are major roads which are 100% paved. (Freeways 470 km, main roads 19,466 km, secondary roads 40,000 km). Construction and upgrading for about 7,000 km of roads is under way.

Highway A1 runs from Bazarjan on the Turkish border to the Afghanistan border. The A2 highway leads from the Iraqi border to Mir Javeh on the Pakistan border. The Herat Dughan road to Afghanistan is being rebuilt. A road linking Meshed and Dushanbe in Tajikistan was completed in 1992.

Road transport regulations on size of vehicles and maximum permissible axle loading are strictly observed in Islamic Republic of Iran for transit traffic, and maximum axle loading of a vehicle must not exceed the following limits: guide axle (two wheels) 6 tons; single axle (four wheels) 13 tons; tandem axle (eight wheels) 20 tons. Border-crossing points to the neighbouring countries are:

Azerbaijan:	Jolfa and Astara
Afghanistan:	Dughan
Iran:	Khosravi and Khorramshar (Shalamche)
Pakistan:	Mir Javeh, Hohak and Pishin
Turkey:	Bazargan, Sero and Razi
Turkmenistan:	Bajgiran, Seraks, Loftabad and Incheborum

Ports: There are two major ports on the Caspian Sea, and have on the Persian Gulf, of which Bandar Abbas and Bandar Imam Khomeini are most active. Facilities at these ports have a nominal capacity of 32 million tons per year. Modernization and construction programmes are being implemented at Bandar Abbas and Chah Bahar Ports, and two new ports on the Caspian sea are being built to service increasing traffic between Islamic Republic of Iran and CAR.

The two ports in the Hormoz Strait have at present sufficient capacity to handle transit traffic from Central Asia. Their capacities can also be relatively easily increased to handle growing traffic from CAR.

1. The port of Shahid Raiai - Bandar Abbas has 5 berths in total length 1,000 m, draught 12 m, 2 units 40-ton gantry cranes (2 more to be installed), 10 units of 40-ton transtainers; 5 units of toplift trucks (6 more to be installed), 10 unit of towing heads (30 more to be installed), 2 units of cranes (2 more to be installed). Total area of warehouses is about 171,000 m², open storage area is about 300,000 m² and storage capacity for 12,500 TEUs. The potential for handling containers is about 80,000 TEUs. in 1993 total container operations amounted 55,675 TEUs. Container operations are computerized, providing efficient handling. Background area, available for future development, is more than 60 million m². The total capacity of the port is 28 m t/year with the excess capacity of 16 m t/year.

Railway marshalling yard capacity will be available after completion of the railway link in 1995. There is good road access to the port and roads within the port area.

2. The port of Chah Bahar is a new developing port with good road access from Turkmenistan and Pakistan. Distance from Tehran is as 322 km, from the border-crossing points with Turkmenistan: Loffabad 1,925 km, Badjigiran 1,858 km, Seraks 1,832 km, and Incheborum 2,190 km. The port's present capacity is 2.5 m year with container handling equipment. Capital improvements are expected up to year 2000 to increase the port capacity to 5.5 m t/year. The port has at present excess capacity and lot of available space for development.

At present railway services are available between the port of Emam Khomeini and Tehran (927 km). Container handling equipment is available: 5 container berths with annual container discharge capacity of 50,000 TEU.

**ROUTES AND DISTANCES FROM BORDER-CROSSING POINTS
TURKMENISTAN-IRAN TO BANDAR ABBAS
AND CHAH BAHAR PORTS**

	<u>Routes</u>	<u>Km</u>
1.	Loftabad-Meshad-Zahedan-Chah Bahar	1,925 km
2.	Badjigiran-Meshad-Zahedan-Chah Bahar	1,858 km
3.	Seraks-Meshad-Zahedan-Chah Bahar	1,832 km
4.	Loftabad-Meshad-Gonabad-Ravar-Kerman-Sirjan	1,562 km
5.	Badjigiran-Meshad-Gonabad-Ravar-Kerman-Sirjan Bandar Abbas	1,495 km
6.	Seraks-Meshad-Gonabad-Ravar-Kerman-Sirjan Bandar Abbas	1,469 km
7.	Loftabad-Meshad-Tabas-Yazd-Anar-Sirjan Bandar Abbas	1,938 km
8.	Badjigiran-Meshad-Tabas-Yazd-Anar-Sirjan Bandar Abbas	1,871 km
9.	Seraks-Meshad-Tabas-Yazd-Anar-Sirjan Bandar Abbas	1,845 km
10.	Incheborum-Minudasht-Meshad-Zahedan-Chah Bahar	2,190 km
11.	Incheborum-Azadshahr-Shahood-Tehran-Anar- Bandar Abbas	1,910 km

PAKISTAN

Area: 803,950 km²

Population: 120 million (1992)

The railway system at present covers 8,775 route km, mainly broad gauge 1,676 mm. The rolling stock comprises 703 locomotives and 29,450 freight wagons.¹²

Present railway capacity can accommodate up to 50% increase of traffic. If new railway links are established, linking Pakistan railways with Central Asia via Afghanistan, a much higher traffic volume can be expected which would require new investments. Pakistan railways have one border-crossing at Koh-i-Taftan with Islamic Republic of Iran and Landikotal station at Afghanistan border. There is no traffic at present on the railway line between Peshawar and Landikotal. Freight destined to Afghanistan is brought by rail to Peshawar, then transloaded to trucks for onward transport to Afghanistan. A double line (broad gauge) is connecting Chaman, next to Afghanistan border, with the railway network providing access to Karachi port.

Pakistan railways are considering railway connections via Afghanistan to Central Asia, linking with their railway lines at Termez (Uzbekistan) and/or Kushka (Turkmenistan). Both alternatives are around 800 km each.

To facilitate efficient, freight movement a modern Inland Container Freight Station has been developed at Lahore Dry Port. Movement of 20 foot containers, carrying import and export goods, reached in 1992-1993 the of 20,000 figure. Container unit trains between Dry Ports (in Lahore, Sialkot, Rawalpindi and Peshawar) and Karachi have considerably reduced the transit time.

Facilities created at dry ports save time and costs involved in completing customs and port formalities at Karachi.

The length of road network is total 130,000 km of which: national highways 6,580 km, provincial highways 48,263 km, farm to market rural roads 65,957 km, urban roads 9,200 km. Eight National highways carry over 60% of all traffic. The National Highway Authority development programme involves integrated efforts on upgrading and dualization of existing roads, as well as construction of new roads to meet the growing traffic demand.

Pakistan Motorway/Expressway Project aims at providing modern North-South link from Karachi to Peshawar. The Expressway is providing a link from Ratodero to the Gwadar deep sea port, which is being developed in Baluchistan. Feasibility study and detailed design of this 897 km road is being prepared.

The dualization of the whole section of National Highway route N-5 (1,762 km) is given a top priority.

The National Highway N-55 (1,204 km) on the west bank of Indus River, commonly known as Indus Highway, is under improvement.

¹² Source: Pakistan Railways Year Book, 1992-93.

The construction of Pakistan Motorway from Lahore to Islamabad, (340 km) has recently been commenced. This motorway will be an alternative route to National Highway N-5 for motorway sections between Islamabad and Peshawar.

The Karakoram Highway (806 km) from Hassanabdal (near Taxila)-Gilgit-Hunza to China at Khunjerab, provides a route to China and links to Central Asia (Dushanbe, Almaty). The road needs reconstruction and improvement, and is not always passable in winter.

The ECO Highway provides a vital link between Afghanistan, Islamic Republic of Iran and the coastal belt of Pakistan. Karachi and Quetta are linked by national highway N-25, Quetta and Toftan are linked by N-40. The ECO Highway is the only route for through traffic between Karachi and the rest of Baluchistan.

In principle, maximum axle load standards are 8 t, there are no major physical bottlenecks on the highway network, except some missing links. All the major cities - towns have been linked with paved roads and federal and provincial capitals are linked with each other and with major sea ports.

International linkages to neighbouring countries are provided via 6 border-crossing points:

a) Pakistan/Afghanistan have two border-crossing points at Torkham on Asian Highway Route A-1 and Chaman on Route A-75. The roads leading to them are paved and kept in satisfactory condition.

b) Pakistan/Islamic Republic of Iran have one major border-crossing point located at Taftan on Asian Highway Route A-2. A railway link also exists at Taftan.

c) Pakistan/India have 2 border-crossing points at Wagha on Asian Highway Route A-1 and at Hussainiwala on Asian Highway Route A-2. Roads leading to both are paved. Only one border point at Wagha is open for traffic. A railway link also exists between India and Pakistan and there is a regular train service up to the border at Wagha.

d) Pakistan/China have one border crossing point located at Khunjerab on national highway N-35. Khunjerab peak is at a 4,300 m altitude. The road up to the border is paved, but not operational during winter.

There are two international **Ports** in Pakistan, Karachi and Port Muhammad bin Qasim. Karachi at present handles the bulk of the traffic. During the nine months to end - March 1993 it handled 16.1 m tons of cargo compared with 20.5 m tons during the whole 1991-92 period. Port Qasim, 50 km south-east of Karachi, is nominated as a major bulk cargo port and is capable of handling 13 m tons of cargo a year. In the first nine months of 1992-93 it handled 6.2 m tons.

Karachi port handled 22 m tons of cargo, 500,000 TEU, operating two private container terminals providing 25 ha area for storage and warehousing. Four new multipurpose berths will be constructed by 1997, and by year of 2000 the capacity of the port will reach 30 m tons.

The Port of Qasim is a multipurpose port.

Both ports are linked by rail and road with the hinterland, and have excess capacity for transit trade from and to land-locked countries of Central Asia and Afghanistan.

**ANNEX 7.4 CONTAINER TERMINALS
IN CENTRAL ASIA**

Container Terminals in Central Asia

TURKMENISTAN

LOCATION	ZERGER STATION	OBEZBERDY-KULIEVO STATION	MAYSKAYA STATION
Ownership/Shareholding Structure	Railway of Turkmenistan	Railway of Turkmenistan	Railway of Turkmenistan
Customs Clearance/Documentation Service	<ul style="list-style-type: none"> - Customs clearance of inbound cargoes - Customs clearance of outbound cargoes 	<ul style="list-style-type: none"> - Customs clearance of inbound cargoes - Customs clearance of outbound cargoes 	<ul style="list-style-type: none"> - Customs clearance of inbound cargoes - Customs clearance of outbound cargoes
Types/Sizes of Containers Handled	ISO 20 Foot	ISO 20 Foot	ISO 20 Foot
Area of (a) Container Yard (CY) (b) CFS	26,800 square metres 10,000 square metres	26,930 square metres 4,500 square metres	10,000 square metres 7,500 square metres
Railway Facilities	<ul style="list-style-type: none"> - Number of Siding Tracks: 1 - Length of Siding Tracks: 300 metres 	<ul style="list-style-type: none"> - Number of Siding Tracks: 1 - Length of Siding Tracks: 150 metres 	<ul style="list-style-type: none"> - Number of Siding Tracks: 1 - Length of Siding Tracks: 250 metres
Details of Container and Cargo-handling equipment in CY	Number of rail mounted gantry cranes: 2	Number of rail mounted gantry cranes: 1	Number of rail mounted gantry cranes: 1
Container-handling Capacity	In CFS: 80 TEU per day	In CFS: 100 TEU per day	In CFS: 100 TEU per day

Container Terminals in Central Asia

UZBEKISTAN

LOCATION	KARSHI CONTAINER YARD	ULUKBEK CONTAINER YARD	MARGILAN CONTAINER YARD	KAKIR CONTAINER YARD	RAUSTAN CONTAINER YARD
Ownership/Shareholding Structure	State owned	State owned	State owned	State owned	State owned
Customs Clearance/Documentation Services	-	- Customs clearance of inbound cargoes - Customs clearance of outbound cargoes - Customs/shipping documentation	- Customs clearance of inbound cargoes - Customs clearance of outbound cargoes - Customs/shipping documentation	- Customs clearance of inbound cargoes - Customs clearance of outbound cargoes - Customs/shipping documentation	- Customs clearance of inbound cargoes - Customs clearance of outbound cargoes - Customs/shipping documentation
Type/Sized of Container Handled	ISO 20 Foot	ISO 20 Foot	ISO 20 Foot	ISO 20 Foot	ISO 20 Foot
Area of (a) Container Yard (CY)	2,000 square metres	2,703 square metres	4,500 square metres	4,000 square metres	1,200 square metres
Railway Facilities	Number of Siding Tracks: 1	- Number of Siding Tracks: 2 - Length of Siding Tracks: 607 metres	-	- Number of Siding Tracks: 2 - Length of Siding Tracks: 400 metres	-
Details of Container and Cargo-handling Equipment in CY	- Number of rail mounted gantry cranes: 3	Number of rail mounted gantry cranes: 5	- Number of rail gantry cranes: 3 - Number of light forklifts: 2	Number of rail mounted gantry crane: 4	Number of rail mounted gantry cranes: 5
in CFS/Warehouse	-	-	-	-	-
Container-handling Capacity	-	In CY: 757 TEU per day	In CY: 400 TEU per day	In CY: 80 TEU per day	In CY : 550 TEU per day

Container Terminals in Central Asia

UZBEKISTAN (Cont'd)

LOCATION	TINCHILIT CONTAINER YARD	ANDIJAN CONTAIN YARD	SHUMILOVA RAILWAY STATION CONTAIN YARD	DJIZAK CONTAINER YARD	BUKHARA II CONTAINER YARD	URGENCH CONTAINER YARD
Ownership/Shareholding Structure	State owned	State owned	State owned	State owned	State owned	State owned
Custom Clearance/Documentation Services	- Customs clearance of inbound cargoes - Customs clearance of outbound cargoes - Customs/shipping documentation	- Customs clearance of inbound cargoes - Customs clearance of outbound cargoes - Customs/shipping documentation	- Customs clearance of inbound cargoes - Customs clearance of outbound cargoes - Customs/shipping documentation	- Customs clearance of inbound cargoes - Customs clearance of outbound cargoes - Customs/shipping documentation	- Customs clearance of inbound cargoes - Customs clearance of outbound cargoes - Customs/shipping documentation	- Customs clearance of inbound cargoes - Customs clearance of outbound cargoes
Types/Sizes of Container Handled	- ISO 20 Foot - Refer containers	- ISO 20 Foot - Non-ISO domestic (various sizes)	ISO 20 Foot	ISO 20 Foot	ISO 20 Foot	ISO 20 Foot
Area of (a) Container Yard (CY)	1,200 square metres	4,000 square metres	14,250 squares metres	3,000 square metres	4,000 square metres	3,600 square metres
Details of Container and Cargo-handling Equipment in CY	Number of rail mounted gantry cranes: 3	Number of rail mounted gantry cranes: 5	- Number of rail mounted gantry cranes: 3 - Number of light forklifts: 2	Number of rail mounted gantry cranes: 4	Number of rail mounted gantry cranes: 5	Number of rail mounted gantry cranes: 4
in CFS/Warehouse	-	-	-	-	-	-
Container-handling Capacity	-	In CY: 757 TEU per day	In CY: 400 TEU per day	In CY: 80 TEU per day	In CY: 550 TEU per day	in CY: 400 TEU per day

Container Terminals in Central Asia

KAZAKSTAN

LOCATION	ALMATY	KARAGANDA	SEMPALATINSK
Ownership/Shareholding Structure	Aimaty Railway	Tselinnaya Railway	Almaty Railway
Customs Clearance/Documentation Services	- Customs clearance of inbound cargoes	- Customs/shipping documentation	- Customs clearance of inbound cargoes
Types/Sizes of Container Handled	- ISO 20 Foot - Non-ISO domestic (various sizes)	- ISO 20 Foot - ISO 40 Foot - Non-ISO 40 + Foot	- ISO 20 Foot - Non-ISO domestic (various sizes)
Area of (a) Container Yard (CY) (b) Bonded Storage in Warehouse or CFS	8,250 square metres 8,250 square metres	4,800 square metres	12,000 square metres 12,000 square metres
Railway Facilities	Number of Siding Tracks: 2	Number of Siding Tracks: 1	Number of Siding Tracks: 2
Details of Container and Cargo Handling Equipment in CY	- Number of rail mounted gantry cranes: 3 - Number of prime movers/tractors: 2	-	Number of rail mounted gantry cranes: 3
in CFS/Warehouse	Number of light forklifts: 4	- Number of medium tonnage container warehouse cranes: 5 - Number of 20 tonne container warehouse cranes: 2	Number of Light forklifts: 4
Containers Handling Capacity	-	In CFS 96 TEU per day	-

Container Terminals in Central Asia

KYRGYZSTAN

LOCATION	BISHKEK TEP CONTAINER YARD	ISSYK-KUL SHIPPING COMPANY	PRJEVALSK PORT	RYBACHIE CONTAINER YARDS	ALMEDIN FREIGHT STATION	BISHKEK 1 CONTAINER YARD
Ownership/Shareholding Structure	MINTRANS	Ministry of Transport	Issyk-kul Shipping Company	Railway of Kyrgyzstan	Railway of Kyrgyzstan	Railway of Kyrgyzstan
Customs Clearance/Documentation Services	- Customs clearance of inbound cargoes - Customs clearance of outbound cargoes - Customs/shipping documentation	- Customs clearance of inbound cargoes - Customs clearance of outbound cargoes - Customs/shipping documentation	- Customs clearance of inbound cargoes - Customs clearance of outbound cargoes - Customs/shipping documentation	- Customs clearance of inbound cargoes - Customs clearance of outbound cargoes - Customs/shipping documentation	- Customs clearance of inbound cargoes - Customs clearance of outbound cargoes	- Customs clearance of inbound cargoes - Customs clearance of outbound cargoes
Types/Sizes of Containers Handled	Non-ISO domestic (various sizes)	Non-ISO domestic (various sizes)	Non-ISO domestic (various sizes)	Non-ISO domestic (various sizes)	- ISO 20 Foot - Non-ISO domestic (various sizes)	Non-ISO domestic (various sizes)
Area of (a) Container Yard (CY)	25,875 square metres	1,500 square metres	1,500 square metres	-	-	-
(b) Bounded Storage in Warehouse or CFS	10,000 square metres	1,500 square metres	1,500 square metres	1,408 square metres	1,940 square metres	4,410 square metres
Railway Facilities	-	-	-	- Number of Siding Tracks: 1 - Length of Siding Tracks: 88 metres	- Number of Siding Tracks: 2 - Length of Siding Tracks: 500 metres each	- Number of Siding Tracks: 2 - Length of Siding Tracks: 280 metres
Details of Container and Cargo-handling Equipment in CY	Number of rail mounted gantry cranes: 1	- Number of heavy duty forklifts/toplifters: 3 - Number of heavy duty forklifts/toplifters: 2	Number of rail mounted gantry cranes: 1	Number of rail mounted gantry cranes: 1	- Number of rail mounted gantry cranes: 2 - Number of heavy duty forklifts/toplifters: 1	Number of rail mounted gantry cranes: 3
Container-handling Capacity in CY in CFS	- 70 TEU per day - 70 TEU per day	100 TEU per day -	- 100 TEU per day	- 50 TEU per day	- 62 TEU per day	- 235 TEU per day

Container Terminals in Central Asia

TAJIKISTAN

LOCATION	DUSHANBE-2 CONTAINER STATION
Ownership/Shareholding Structure	Dushanbe Department of Middle Asian Railway
Customs clearance/documentation services	<ul style="list-style-type: none"> - Customs clearance of inbound cargoes - Customs clearance of outbound cargoes
Types/Sizes of Container Handled	<ul style="list-style-type: none"> - ISO 20 Foot - Non-ISO domestic (various sizes)
Area of Container Yard (CY)	7,260 square metres
Railway Facilities	<ul style="list-style-type: none"> - Number of Siding Tracks: 1 - Length of Siding Tracks: 330 metres
Details of Container and Cargo-handling Equipment in CY	Number of rail mounted gantry cranes: 2
Container-handling Capacity	In CY: 100 TEU per day

**ANNEX 7.5 ROAD AND RAIL BORDER-CROSSING BETWEEN CAR
AND AFGHANISTAN, ISLAMIC REPUBLIC OF IRAN AND CHINA**

Road	Rail
<u>Turkmenistan - Islamic Republic of Iran</u>	
1. Gudriolum/Incheborum	1. Seraks/Seraks
2. Gaudan/Badjigiran	
3. Seraks/Seraks	
4. Artik/Loftabad	
<u>Turkmenistan - Afghanistan</u>	
1. Kushka/Herat	1. Kushka
<u>Tajikistan - Afghanistan</u>	
1. Prandz	
2. Kuliab	
<u>Uzbekistan - Afghanistan</u>	
1. Termez/Mazar-Sherif	1. Termez
<u>Uzbekistan - Kyrgyzstan - China</u>	
1. Sari-Tash/Kashgar	
<u>Kazakhstan - China</u>	
1. Narinkol	1. Druzba/Alatan Shankow
2. Kolzat	
3. Horgos	
4. Druzba	
5. Bakhty	
6. Maykapchengay	
7. Alexeyevka	
Total road crossings: 17	Total rail crossings: 4

**ANNEX 7.6 BILATERAL AND MULTILATERAL TRANSIT AND TRANSPORT
AGREEMENTS SIGNED BETWEEN THE CENTRAL ASIAN REPUBLICS AND
NEIGHBOURING COUNTRIES IN THE FIELD OF
TRANSIT AND TRANSPORT**

1. Agreement between the Government of Islamic Republic of Pakistan and the Government of the Kingdom of Afghanistan for Regulation of Traffic in Transit (signed at Kabul on 2.3.1965).
2. Protocol of Exchange of the Instrument of Ratification of the Agreement for Regulation of Traffic in Transit between the Government of the Islamic Republic of Pakistan and the Government of the Kingdom of Afghanistan (signed at Rawalpindi on 26.8.1965).
3. Agreement on bilateral Road Transportation of Goods between the Government of the Islamic Republic of Pakistan and the Government of the Islamic Republic of Iran (signed Islamabad on 28.7.1987).
4. Agreement on Transit among CIS signed at Moscow on 8.2.1992:
5. Memorandum on Friendship and cooperation between Turkmenistan and Islamic Republic of Iran (signed at Tehran on 17.2.1992) (this contains three articles relating to cooperation in transport matters).
6. Agreement on Principles of Customs Policy among CIS (except Ukraine) signed at Moscow on 13.3.1992).
Terms for constitution of the Custom Council to implement the Agreement on Customs Union also signed on 13.3.1992.
7. Agreement between the Government of the Russian Federation and the Government of the Republic of Kazakhstan on the Principles of Cooperation and Conditions of Interrelations in the field of Transport (signed on 23.3.1992).
8. Agreement between the Republic of Kazakhstan and the Russian Federation on the Coordination of the Railway Transport Activities (signed on 23.3.1992).
9. Agreement on Customs Procedures for goods in Transit between Customs Agencies of Azerbaijan, Armenia, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Uzbekistan and Ukrain (signed at Almaty on 2.4.1992).
10. Agreement between the Government of Kazakhstan, the Republic of Kyrgyzstan, the Republic of Tajikistan, Turkmenistan and the Republic of Uzbekistan on Principles of Cooperation and Coordinations of Relations in the area of Transport (signed at Bishkek on 23.4.1992).
11. International Road Transport Agreement between the Government of the Republic of Kazakhstan and the Government of the Republic of Turkey (signed at Almaty on 1.5.92)
12. International Road Transport Agreement between the Government of Turkmenistan and the Government of the Republic of Turkey (signed at Ashkhabad on 2.5.1992).

13. Agreement among Islamic Republic of Iran, Republic of Kazakhstan, Republic of Kyrgyzstan, Islamic Republic of Pakistan, Turkish Republic, Turkmenistan and Republic of Uzbekistan on the economic cooperation in implementation of the projects of mutual interest. (signed at Ashgabat on 10.5.1992).

Agreement between the Ministry of Transport of the Republic of Kazakhstan and the Ministry of Motor Vehicle Transport and Roads of Turkmenistan on motor vehicle communications (signed on 10.5.1992).

Agreement on Motor Transport between the Government of the People's Republic of China and the Government of the Republic of Kazakhstan (signed at Beijing on 26.9.1992).

16. Protocol on the Implementation of the Agreement on Motor Transport between the Government of the People's Republic of China and the Government of the Republic of Kazakhstan (9.1992).

17. Agreement on Border Railways between the Ministry of Railways in China and Ministry of Transport and Communications, Kazakhstan (Urumqi - Sept. 1992).

18. Agreement on Border Railways Joint Committee: China and Kazakhstan, (Aremutu - Nov. 1992).

19. Protocol on the development of cooperation in the area of transport between the Islamic Republic of Iran and the Republic of Kazakhstan (signed at Tehran on 2.11.1992).

20. Agreement between the Government of the Republic of Uzbekistan and the Government of Ukraine on International Automobile Connections (Signed at Tashkent on 20.2.1993).

21. Agreement between the Ministry of Transport of the Russian Federation and the Uzbekistan state shareholder Automobile Transport Cooperation on Automobile connections (signed at Moscow on 18.3.1993).

22. Agreement on International Road Transport between the Government of the Islamic Republic of Iran and the Government of the Republic of Kazakhstan (signed at Tehran on 12.5.1993).

International Road Transport Agreement between the Government of Turkmenistan and the Government of the Islamic Republic of Iran (signed at Ashgabat on 24.10.1993).

24. Agreement between the Government of the Islamic Republic of Pakistan and the Government of the People's Republic of China concerning International Road Transport (signed at Beijing on 28.12.1993).

25. Protocol on the application of Agreement between the Government of the Islamic Republic of Pakistan and the Government of the People's Republic of China concerning International Road Transport (signed at Beijing on 28.12.1993).

26. Memorandum between the Ministry of Automobile Transportation and Roads of Turkmenistan and the Ministry of Roads and Transportation of the Islamic Republic of Iran on International carriage of passengers and cargoes (signed at Tehran on 4.1.1994).

Memorandum between the Government of Turkmenistan and the Government of Islamic Republic of Iran on cooperation in the area of international railway connections. (signed at Tehran on 6.1.1994).

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