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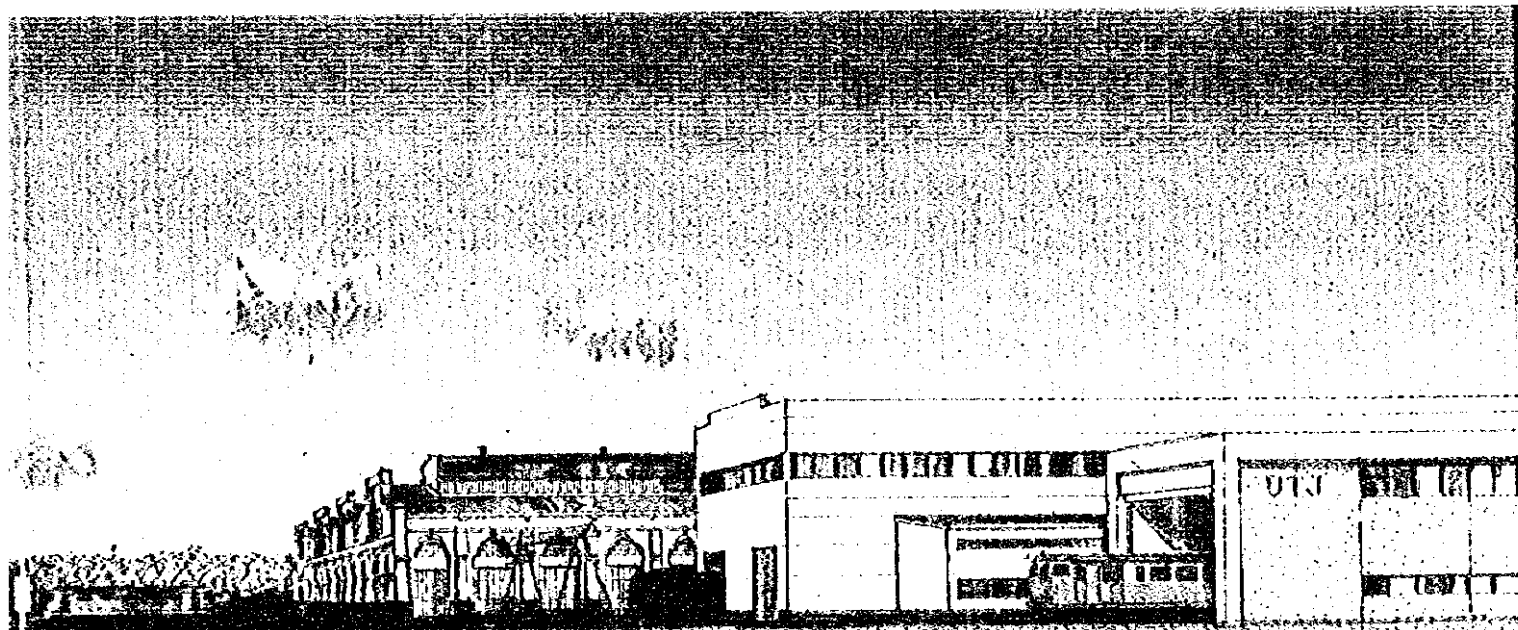
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REPUBLIC OF UZBEKISTAN

社会開発調査部報告書

THE FEASIBILITY STUDY  
ON  
THE CONSTRUCTION OF ELECTRIC LOCOMOTIVE REPAIR  
WORKSHOP  
IN  
UZBEKISTAN

FINAL REPORT



JULY 1997

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JAPAN RAILWAY TECHNICAL SERVICE  
JAPAN TRANSPORTATION CONSULTANTS, INC.  
PACIFIC CONSULTANTS INTERNATIONAL

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COOPERATION AGENCY (JICA)**

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1137799 (1)

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1 US\$ = 120 ¥

1 US\$ = 100 Sum (Market rate)

Application date January, 1997

## PREFACE

In response to a request from the Government of Republic of Uzbekistan, the Government of Japan decided to conduct a feasibility study on the construction of electric locomotive repair workshop in Uzbekistan and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Uzbekistan a study team headed by Mr. Terado, Senior Technical Advisor, Japan Railway Technical Service, and composed of members from Japan Railway Technical Service, Japan Transportation Consultants, Inc. and Pacific Consultants International, two times between December 1996 and May 1997.

The team held discussions with the officials concerned of the Government of Uzbekistan, and conducted a field survey at the study area. After the team returned to Japan, further studies were made and the present report was prepared.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of Republic of Uzbekistan for their close cooperation extended to the team.

July 1997



Kimio Fujita

President

Japan International Cooperation Agency





## Letter of Transmittal

July 1997

Mr. Kimio FUJITA  
President  
Japan International Cooperation Agency

It is my great pleasure to submit herewith the Final Report for the Feasibility Study on the Construction of Electric Locomotive Repair Workshop in Uzbekistan.

The report is the result of the Study carried out by Japan Railway Technical Service, Japan Transportation Consultants Inc. and Pacific Consultants International as per the contract with Japan International Cooperation Agency (JICA) from November 1996 to August 1997.

Four alternatives were settled and our proposal, which is suggested as the best alternative for construction of electric locomotives and railcars repair workshop on the site of Tashkent Diesel Locomotive Repair Workshop and is feasible, was accepted.

On behalf of the study team, let me express my heartfelt thanks to the Government of Uzbekistan, especially Uzbekistan Railways, for the generous cooperation, assistance and warm hospitality they extended to them throughout entire period of the Study.

Our thanks are also due to Japan International Cooperation Agency, the Ministry of Foreign Affairs and the Japanese Embassy in Uzbekistan for their valuable advice and support during the Study and preparation of this report.

I sincerely hope this report will be found helpful to UTJ in constructing electric locomotives and railcars repair workshop in Uzbekistan.

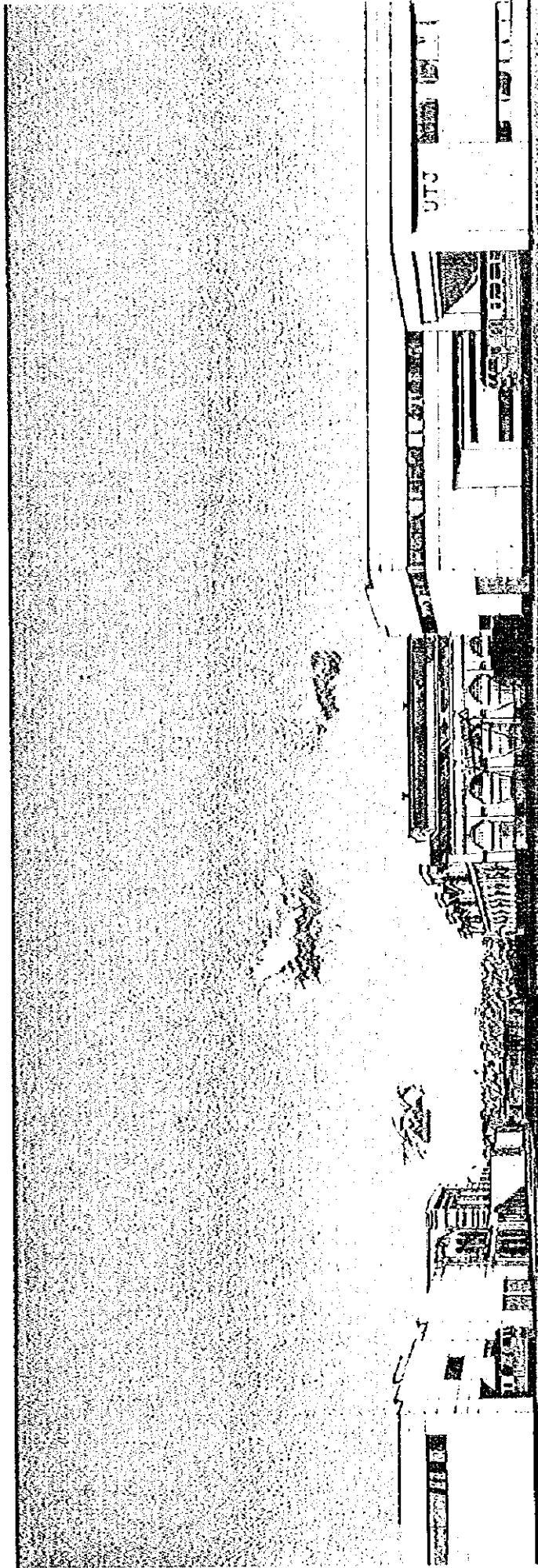
Yours faithfully,

Kouji TERADO  
Senior Technical Adviser  
Japan Railway Technical Service

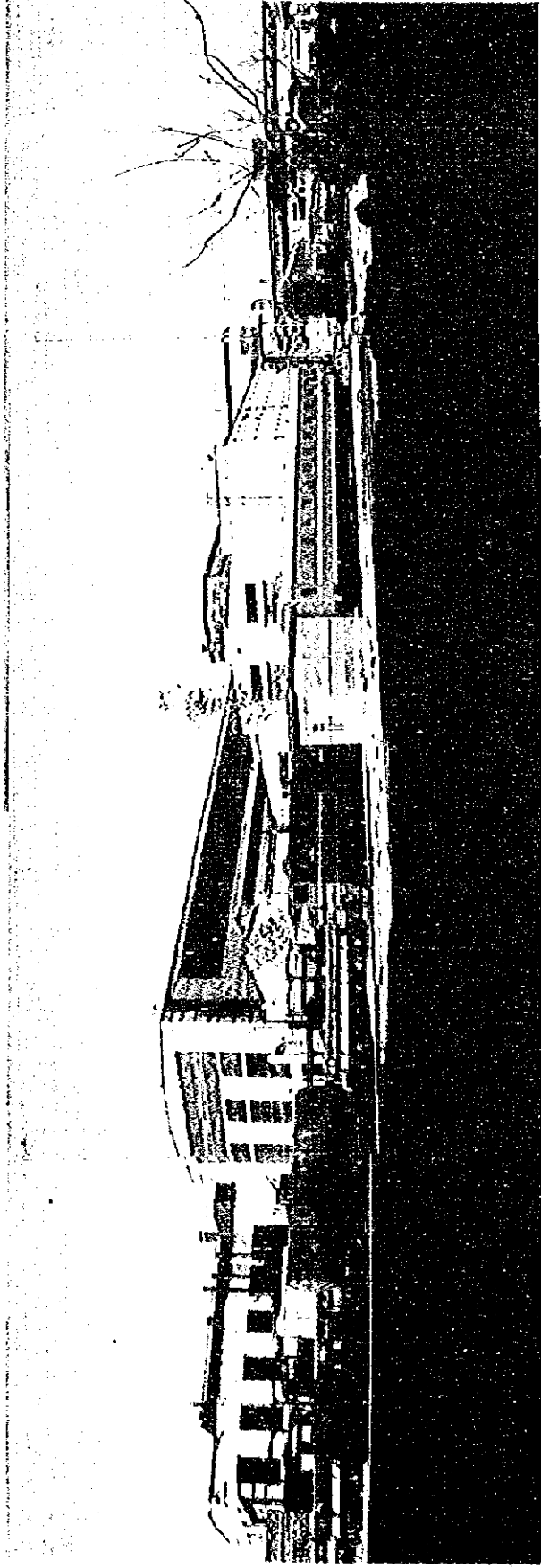


## The Feasibility Study on the Construction of Electric Locomotive Repair Workshop in Uzbekistan

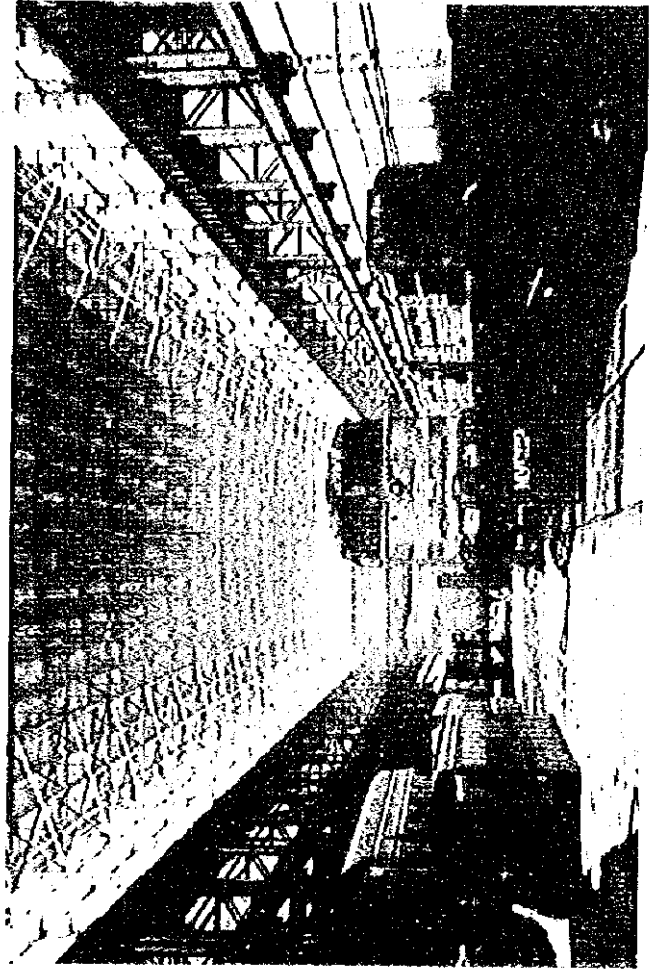
Objective Of Project	<p>In response to the request of the Uzbekistan Government, conducted the feasibility study on the construction of electric locomotive(EL) repair workshop ,based on the repair program to cope with the future extension of electrified lines and expected increase of EL repair.</p> <p>Study areas are Uzbekistan Depot, Tashkent Diesel Locomotive Repair Workshop(Tashkent Workshop) and their neighboring areas.</p>																							
Basic Approach and Methodology for Study	<p>(Basic approach)</p> <ol style="list-style-type: none"> <li>1. As for the construction, on the site of Uzbekistan Depot or of Tashkent Workshop of electric locomotive and railcar workshop for their fleet in 2010, the alternatives are settled and compared, and for the best case, after confirmation on technical and economical feasibility of the project, the most suitable construction plan of the repair workshop is established.</li> <li>2. Coordination with the projects of UTJ such as electrification, new line construction and others, which are proceeding or planned, is considered.</li> <li>3. Workshop construction plan is made in consideration of high technical level of UTJ and related enterprises.</li> </ol> <p>(Methodology)</p> <ol style="list-style-type: none"> <li>1. Estimate necessary number of rolling stock in 2010, based on demand forecast, new line construction plan, electrification plan and train operation plan, and settle rolling stock maintenance plan.</li> <li>2. Assuming that proposed sites of workshop construction are Uzbekistan Depot and Tashkent Workshop, and kinds of repaired rolling stock are EL and EC, settle four alternatives. Compare and examine land restriction, environmental problem and construction cost etc. for four alternatives, to choose the most suitable one.</li> <li>3. As for the most suitable alternative, conduct rough design of workshop, economic and financial analysis, and environmental impact analysis, examine execution and funding plan for the project and make overall evaluation with recommendations.</li> </ol>																							
Content of Project	<ol style="list-style-type: none"> <li>1. Estimated yearly number of overhauled rolling stock, as 55 ELs, 128DLs and 40ECs, in case that electrification scale in 2010 is the same as in 2005.</li> <li>2. As the most suitable alternative, chose the one in which overhaul of EL and EC is conducted in Tashkent Workshop. Roughly designed the workshop capable of KP-1 and KP-2 for ELs and ECs, and settled workshop construction plan aiming at start of construction work in 2000 and its completion in 2001.</li> <li>3. Out line of design <table border="1" style="margin: 10px auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th colspan="2">Building (m<sup>2</sup>)</th> <th colspan="2">Equipment and Machinery (Set)</th> <th>Catenary (m)</th> </tr> <tr> <th>Construction</th> <th>Reconstruction</th> <th>Installation</th> <th>Existing</th> <th>Installation</th> </tr> </thead> <tbody> <tr> <td>2160</td> <td>7812</td> <td>232</td> <td>162</td> <td>1790</td> </tr> <tr> <td colspan="2">Total 9972</td> <td colspan="2">Total 394</td> <td>Total 1790</td> </tr> </tbody> </table> </li> <li>4. Estimated rough construction cost amounts to 3940 million yen.</li> </ol>				Building (m <sup>2</sup> )		Equipment and Machinery (Set)		Catenary (m)	Construction	Reconstruction	Installation	Existing	Installation	2160	7812	232	162	1790	Total 9972		Total 394		Total 1790
Building (m <sup>2</sup> )		Equipment and Machinery (Set)		Catenary (m)																				
Construction	Reconstruction	Installation	Existing	Installation																				
2160	7812	232	162	1790																				
Total 9972		Total 394		Total 1790																				
Evaluation Of Project	<ol style="list-style-type: none"> <li>1. Economic evaluation shows that Case 2 of this project (partial replacement of equipment) has an EIRR of 17.1% and is feasible. And an execution of Case 2 is recommended. However, sensitivity analysis with cost increase by 10% and benefit decrease by 10% indicates 7.1% of EIRR, lower figure than the opportunity cost of capital (=12%), and suggests that Sufficient attentions should be paid to economic and price conditions when the project is implemented. It is judged that Case 1 (total replacement of the equipment) can not be feasible since EIRR is at the level of 10.3%, lower than the opportunity cost of capital. Financial analysis shows the same results as the economic analysis. Case 2 has a sufficiently high figure of FLRR of 15.0% to guarantee the profitability of the project, and the implementation of the project (Case 2) is suggested. Sensitivity analysis (cost increase by 10% and benefit decrease by 10%) also indicates that FIRR is lowered to 5.5%, and is significantly affected by changes in cost and benefits. It is suggested that attentions should be paid when the project is implemented.</li> <li>2. No problem relating to initial environmental impact assessment.</li> </ol>																							
Conclusion and Recommendations	<p>It is desirable that construction of electric locomotive repair workshop is proceeded in accordance with the contents of the Final Report.</p> <p>The project is feasible. There is no problem for construction of EL repair workshop in environmental condition and funding plan.</p> <p>For the improvement of UTJ and Tashkent Workshop, concerning to demand forecast, transport, rolling stock maintenance, working environment, workshop management and its operation, concretely recommended establishment of comprehensive data-bank of origin and destination information necessary for demand forecast, public announcement or advertising of train operation time table, improvement of cleaning of rolling stock and parts, measures for wastewater treatment facilities and others, early completion of wastewater treatment facilities in Tashkent Workshop and improvement of organization of Tashkent Workshop, etc.</p>																							



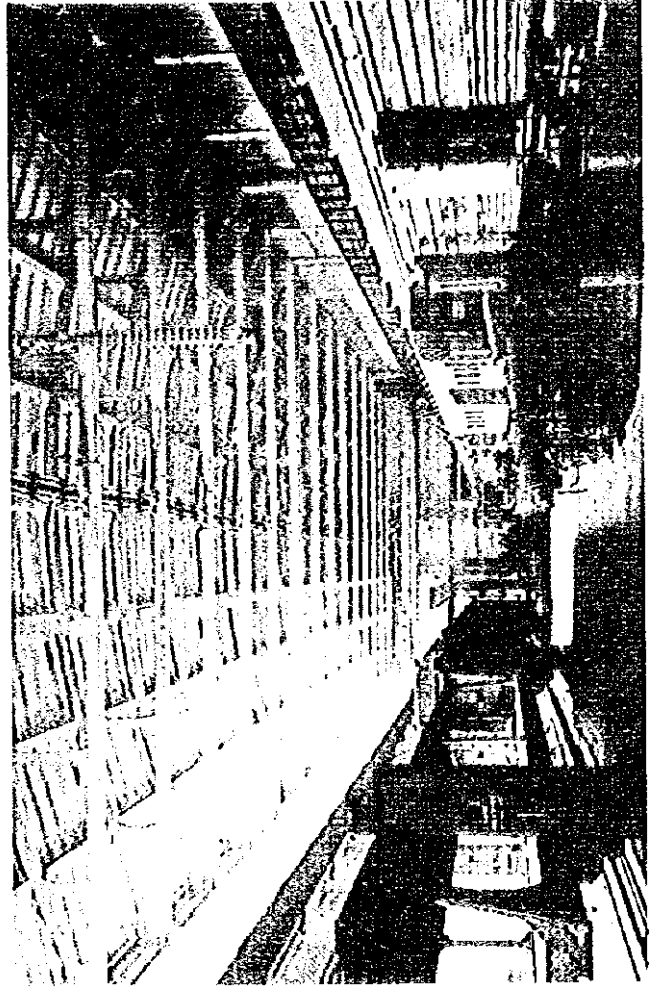
ELECTRIC LOCOMOTIVE REPAIR WORKSHOP



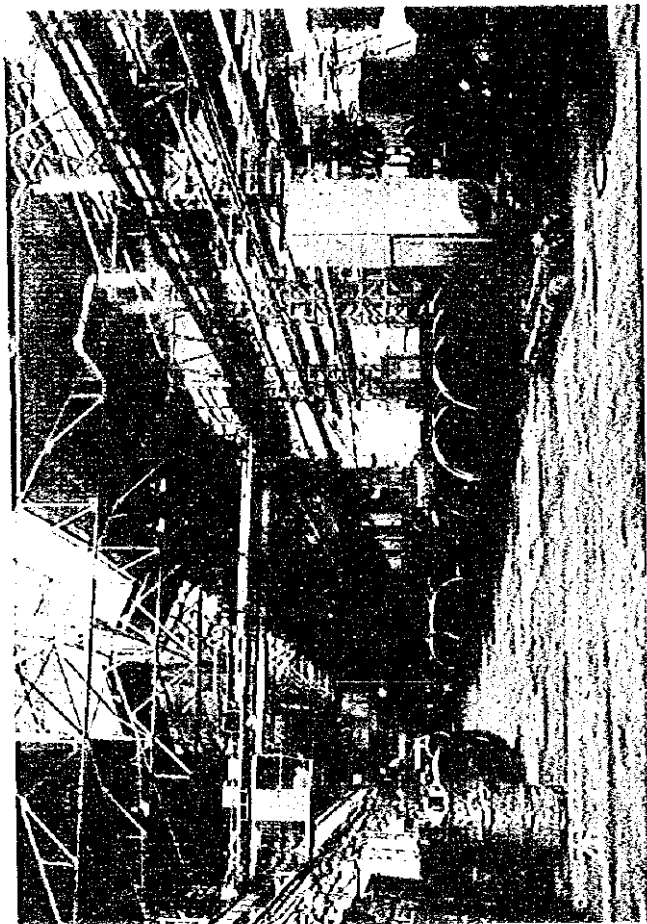
Perspective view of Car body shops for Diesel locomotive and coach, Tashkent Diesel Locomotive Repair Workshop



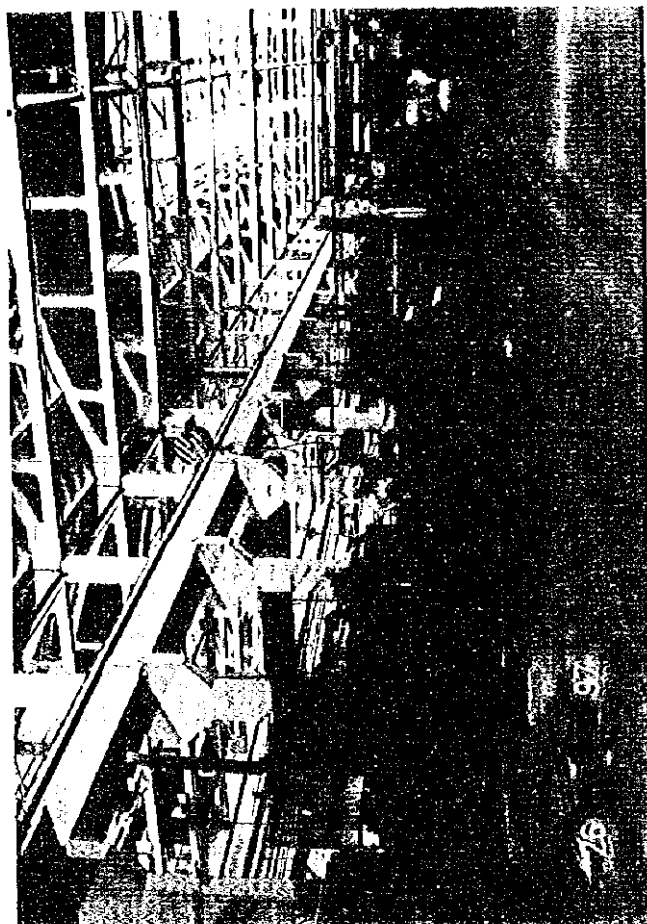
Car body shop for DL



Car body shop for PC



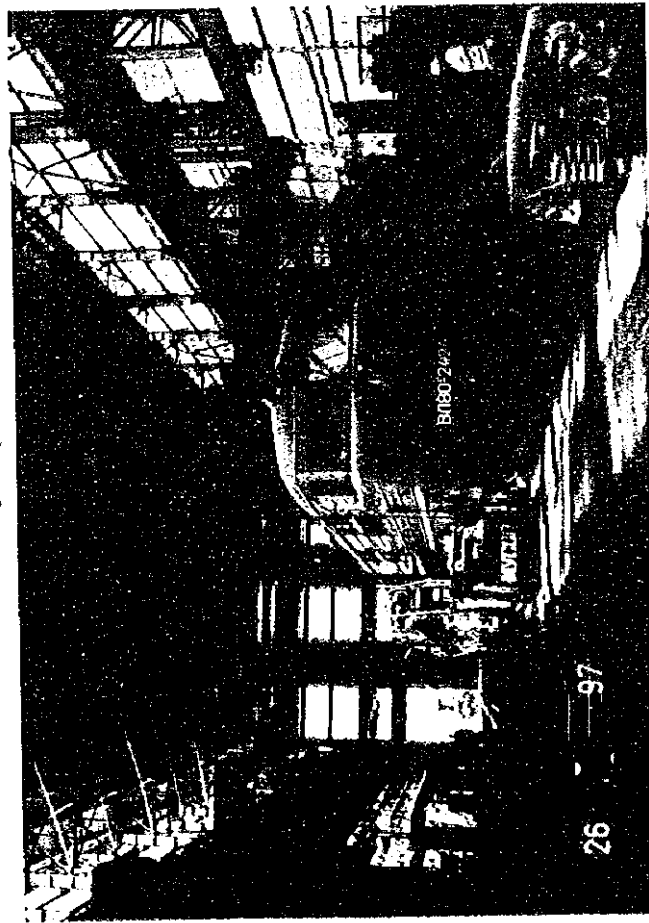
Wheel shop



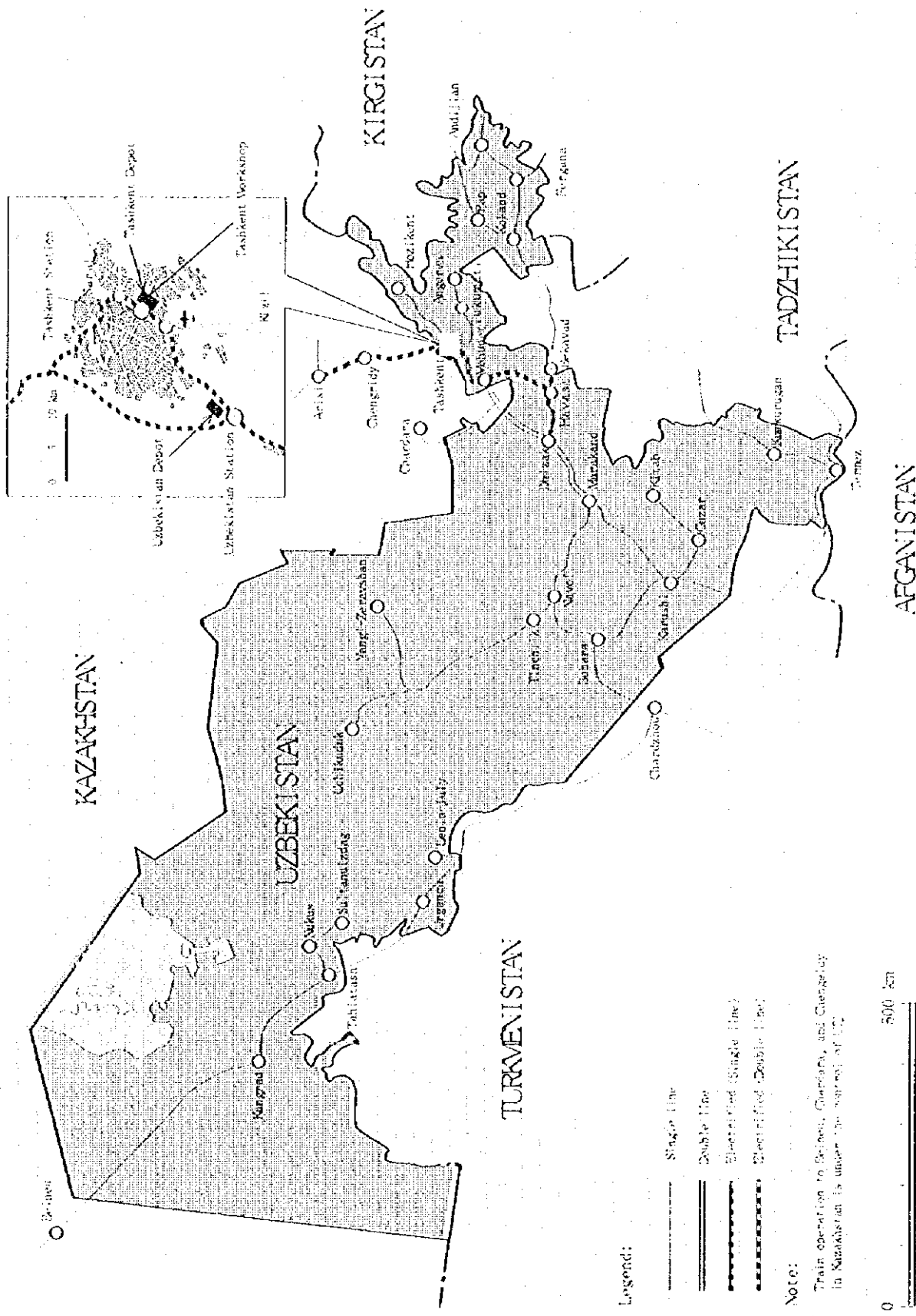
Electric rotating machine shop



Car body shop for DL



Car body shop for DL



Uzbekistan Railway Network





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## **CHAPTER 1 INTRODUCTION**

### **1.1 BACKGROUND AND OBJECTIVE OF THE STUDY**

Uzbekistan Railways (hereinafter referred to as "UTJ") have around 3,660 km of service line and have the role of main transport means in the country, because the country is the same inland one as the other Central Asian Countries.

After the extinction of Soviet Union and the independence of Uzbekistan in 1991, Uzbekistan has directed the new market economy and been slowly getting rid of economical difficulty directly after the independence, keeping aspect of economical stability.

At present, UTJ have no electric locomotive and railcar repair workshop and so have been obliged to entrust their overhaul to Ukraine and others. Uzbekistan Government has decided to construct electric locomotive and railcar repair workshop in Uzbekistan to save valuable foreign currency and wasteful transport days to foreign country, and to cope with the repair work for electric locomotive and railcar which will increase in number due to the extension of electrified lines along with presumed increase of the transport volume.

Based on the above mentioned background and in response to the Uzbekistan Government, the Government of Japan has decided to conduct the Feasibility Study on the Construction of Electric Locomotive Repair Workshop in Uzbekistan.

### **1.2 OUTLINE OF THE STUDY**

#### **1.2.1 Objective of the Study**

The objective is to conduct the feasibility study on the construction of electric locomotive repair workshop where the overhaul of electric locomotives and electric railcars of UTJ can be carried out.

#### **1.2.2 Target year of the Study**

The construction of the electric locomotive repair workshop, capable of carrying out KP-1 and KP-2 for holding number of electric locomotives and electric railcars in 2010, will be completed in 2001.

#### **1.2.3 Study area**

The study area to be covered shall be Uzbekistan Depot ( hereinafter referred to as " Depot " or "Uzbekistan Depot" ), Tashkent Diesel Locomotive Repair Workshop ( hereinafter referred to as "Workshop" or "Tashkent Workshop") and their neighboring areas.( Fig. 1-1 )

### 1.3 BASIC APPROACH OF THE STUDY

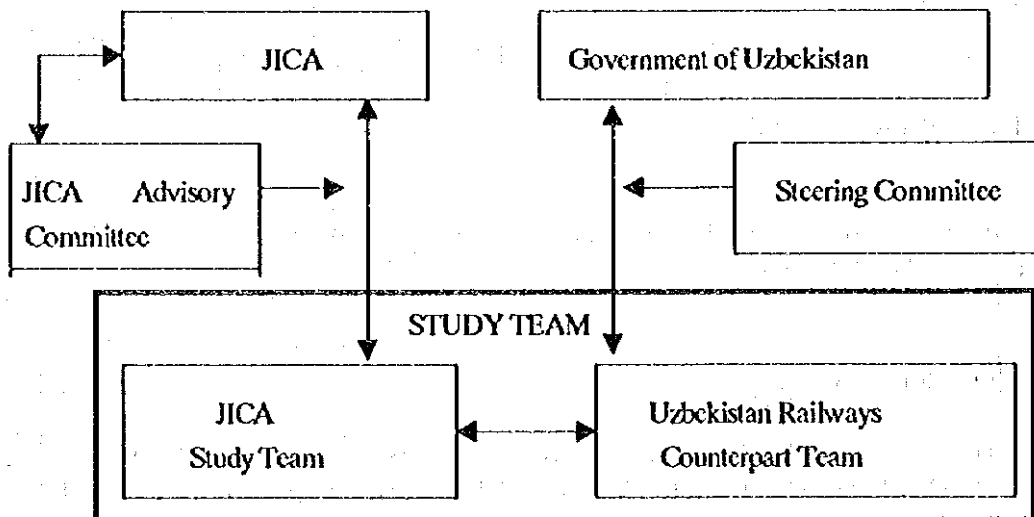
The study team shall work in close cooperation with the Uzbekistan counterpart team based on the following basic policy

- (1) As for the construction, on the site of Uzbekistan Depot or of Tashkent Workshop of electric locomotive and railcar workshop for their fleet in 2010, the alternatives are settled and compared, and for the best case, after confirmation on technical and economical feasibility of the project, the most suitable construction plan of the repair workshop is established.
- (2) Coordination with the projects of UTJ such as electrification, new line construction and others, which are proceeding or planned, is considered.
- (3) Workshop construction plan is made in consideration of high technical level of UTJ and related enterprises.
- (4) Prevention of environmental pollution  
New repair facilities shall be installed in consideration of dust and smoke caused by repair work of electric locomotive and railcar. As for treatment facility of waste water such as surface treating and cleaning water for rolling stock and parts, the recommendation satisfying water quality standard of sewage in Uzbekistan is described.

### 1.4 STUDY ORGANIZATION

#### 1.4.1 Organization

Organization chart is shown in the following chart.





## 1.4.2 Member list

### (1) JICA Study Team

Mr. Koji	TERADO	Leader
Mr. Misao	HISANAGA	Acting Leader/Workshop Management
Mr. Joji	KAWADA	Transport/Rolling Stock Plan/Coordinator
Mr. Yukio	MURAKAMI	Workshop Plan
Mr. Shoichi	SOMA	Workshop Plan
Mr. Masatosi	KIKKAWA	Maintenance Plan
Mr. Hisasi	KOSHIMIZU	Workshop Operation Plan
Mr. Alasdair	COUPER- JOHNSTON	Demand Forecast/Economic and Financial Analysis
Mr. Ryokichi	NAKAMURA	Facilities and Equipment
Mr. Shigco	MATSUMOTO	Building and Facilities
Dr. Kazuhiko	IKEDA	Environmental Problems
Ms. Atsuko	KIKUTSUGI	Interpreter

### (2) JICA Advisory Committee

Mr. Hiroyuki	YAMASHITA	Chairman (Ministry of Transport)
Mr. Takashi	SUZUKI	Member (Ministry of Transport)
Mr. Seizo	MATSURA	Member (Ministry of Transport)
Mr. Taisuke	MIYAO	Member (OECP)

### (3) JICA Head Office

Mr. Takao	KAIBARA	Social Development Study Dept.
Mr. Masaei	MATSUNAGA	Social Development Study Dept.
Mr. Shoichi	TSUGANE	Social Development Study Dept.

### (4) Steering Committee of Uzbekistan Side

Mr. KADYROV	Sh.K.	Chief of Department, Cabinet of Ministers
Mr. ERMETOV	N.E.	Chairman of UTJ
Mr. ISLAMKHOZHAEV	Kh.S.	Deputy Head of Department, Ministry for Foreign Economic Relations
Ms. SULTANBEKOVA	S.	Chief Credit Expert, Ministry of Finances

### (5) UTJ Counterparts

Mr. YUSUPOV	B.V.	First Deputy Chairman
Mr. RAKHIMOV	D.K.	Deputy Chairman
Mr. DAVIDOVICH	V.L.	Head of International Relations Services
Mr. GUBACHIEV	V.A.	Deputy Head of IRS

Mr. ERKINOV N.S.  
Mr. HISMATOLY  
Mr. GLUSCHENKO M.A.  
Mr. AGEEV Y.A.

Deputy Head of IRS  
Chief, Locomotive Service Dpt.  
Chief Engineer, UZZHELDORREMMASH  
Chief production Engineer,  
UZZHELDORREMMASH

Mr. OGAI B.T.  
Mr. DZHURAEV K.M.  
Mr. MIRZAAKHMEDOV S.K.  
Mr. BELTJAKOVA T.M.  
Mr. KOVYRNOV E.A.  
Mr. ISMAILOV K.D.  
Mr. RYBAKOV S.D.  
Ms. KHMELYOVA N.G.  
Ms. IGNATOVA R.A.  
Mr. KHAIFIZOV  
Mr. SHAPAK  
Ms. BEKTYAKOVA  
Ms. PANOVA  
Mr. NISHANBAEV S.Z.

Acting Director, Depot Uzbekistan  
Chief Engineer, Construction Dpt.  
Deputy Chief, Statistics Dpt.  
Statistics Dpt.  
Passenger Transport Dpt.  
Director, TASHZHELDORPROECT  
TASHZHELDORPROECT  
Finance Dpt.  
Finance Dpt.  
For demand forecast  
For demand forecast  
For demand forecast  
For demand forecast  
Railway Facilities Dpt.

## CHAPTER 2 MACRO-ECONOMY AND SOCIAL ASPECTS

### 2.1 MACRO-ECONOMY

#### 2.1.1 Geography

- (1) The Republic of Uzbekistan is one of forty land-locked states in the world, and is one of only two<sup>1</sup> that are doubly land-locked i.e. all of the countries with whom she has a border are themselves land-locked. As access to the sea is important for trade, this unusual feature of the country assumes a particular significance as far as transport strategy is concerned.
- (2) Situated in Central Asia, Uzbekistan is bordered by Kazakhstan in the north and west, Kyrgyzstan in the east, Tadjikistan in the south-east, Afghanistan for a short distance in the south, and Turkmenistan in the south and south-west. The total length of the state borders is 6,221 kilometres.
- (3) The country lies between two large rivers, the Amu Darya in the west (1437km in length) and the Syr Darya in the east (2137km in length), both of which flow (or used to) into the ecologically troubled Aral Sea. The dimensions of the country are 1425km east to west, 930 km north to south, and it covers a total area of 447,400 square kilometres.
- (4) The territory includes a mixture of plain and mountain. The plains are to be found in the west, consisting of the Ustyurt plateau, the lower Amu Darya delta, and the Kyzylkum desert. The foothills and mountains of the Tien Shan and Gissar-Alay ranges are located in the east and south-east, with the highest peak reaching 4,643m.
- (5) The climate of Uzbekistan has sharp contrasts, with cold winters and hot, dry summers. Average winter temperatures drop to about -10°C in the north, while average summer temperatures top 31°C in the south with daily maxima up to 45°C; the hottest months are July and August. Annual rainfall rarely exceeds 200mm in the plains and desert, but can reach 800mm in the mountain regions; annual sunlight hours range from 2700-2980 hours in the north to 2800-3130 hours in the south. The hot summers, aided by extensive irrigation, make ideal conditions for the growing of crops such as cotton, tobacco, fruit and vegetables.
- (6) The country is also blessed with a diversity of natural resources. There are large reserves of oil, coal and gas (mainly in the south), and significant gold deposits exist in the centre of the country around Zarafshan. Among other ores and metals to be found are iron, aluminium, copper, silver, lead, zinc, tin and uranium.
- (7) At the beginning of 1996, Uzbekistan had a population of 23.007 million, growing at a rate of around 2.3% (see section 2.2 for further details). The capital city, Tashkent, is home to approximately 2.1 million people, and the next largest cities are Samarkand (0.362 million), Namangan (0.362 million - sic), Andijan (0.313 million), and Bukhara (0.238 million).

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<sup>1</sup> The other being Liechtenstein (population 30,000; GDP per capita \$32,000)

## 2.1.2 History

- (1) The Central Asian region has had a colourful and chequered history for well over 2,500 years. However, the history of Uzbekistan as a geographical entity is only just over 70 years old, having been artificially created in 1924 by the Soviet regime out of what had been the Emirate of Bukhara, the Khanate of Khiva and the former Turkestan.
- (2) The region's position on the Silk Road trading route between east and west during the first millennium opened it up to a diverse range of technologies, cultures, traditions and religions, of which Islam finally became dominant.
- (3) Periods of invasion and tribal warfare were characteristic of the region. In 1220, Turkestan was occupied by Genghis Khan and the Mongols, and in the fourteenth century Amir Timur ruled the region from Samarkand, leading to the creation of the Great Mogul Empire. This era saw a number of impressive scientific achievements such as the astronomical tables of Ulugh Bek.
- (4) Nevertheless, the development of shipping routes between Europe and the Orient turned the Central Asian region into something of an economic backwater, although trade developed with Russia during the 16th and 17th centuries. In 1860, the region was militarily annexed by Tsarist Russia.
- (5) The Bolshevik revolution of 1917 was followed in 1924, as stated above, by the artificial division of Turkestan into five Soviet Socialist Republics (SSRs) as an instrument of domination. This had the effect of separating ethnic groups, and as we have seen elsewhere in the world (notably in the former Yugoslavia), it has created the necessary pre-conditions for ethnic conflict. Indeed, just prior to independence there was in 1989 a violent clash between Uzbeks and Meshketian Turks in the Fergana Valley (leaving over a hundred dead), and in 1990 a gun battle between Uzbeks and Kyrgyzs in the Kyrgyz city of Osh nearly led to outright war between the two republics.
- (6) Under the Soviet system, Islam was suppressed and many mosques and madrassahs were destroyed. The religion, however, which has traditionally been of the moderate and tolerant Sufi creed, survived; and since independence it has enjoyed something of a revival. Nevertheless, the Government (with half an eye on the success of the fundamentalist Taliban movement in Afghanistan, and half an eye on the religiously-inspired civil war in Tadjikistan)<sup>2</sup> remains deeply suspicious of religious groupings and has, for example, proposed to outlaw the formation of political parties on ethnic or religious grounds<sup>3</sup>.
- (7) During the Second World War, the Soviet authorities moved as much heavy industry as possible away from the west of the Union to protect it from the advancing German forces. Uzbekistan was a beneficiary of this policy, and has inherited an industrial base to bolster its mainly agrarian economy; a good example is the Chkalov aircraft factory, based in

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<sup>2</sup> A peace agreement was reached in Tadjikistan between the Government and the Islamic opposition in December 1996. Whether it will last remains to be seen.

<sup>3</sup> Draft Law published on 19 September 1996

Tashkent, which turns out aircraft such as the Ilyushin 76MF freighter, and shortly the new Ilyushin 114 passenger turbo-prop.

- (8) With the collapse of the Soviet Union, the Uzbekistan Soviet Socialist Republic declared its independence from the former on 31 August 1991. This decision was supported by popular referendum held on 29 December 1991 - the vote in favour was a noteworthy 98.2%. The present Constitution was adopted on 8 December 1992.

### 2.1.3 Political structure

- (1) According to the 1992 Constitution, Uzbekistan is a multi-party democracy and a presidential republic. The electoral system is based on universal suffrage over the age of eighteen.
- (2) The President of the Republic, Islam Karimov, was elected on the same date as the independence referendum with 86% of the vote. He also holds the offices of Head of State, Supreme Commander-in-Chief of the Armed Forces, and Chairman of the Cabinet of Ministers. Prior to independence, he was the President of the Uzbek SSR and First Secretary of the Uzbek Communist Party.
- (3) The President is elected by universal secret ballot for a term of five years, and no-one may hold the office for more than two terms in succession. However, there was no presidential election in 1996 because, by means of a referendum held on March 25<sup>4</sup> 1995, Mr. Karimov's first term was extended to the year 2000; in this case the vote was reported to be, *mirabile dictu*, 99% in favour.
- (4) Executive authority resides within the Cabinet of Ministers, headed by a Prime Minister nominated by the President and approved by the Parliament. In practice, the President maintains considerable if not total control of executive decisions. As of Autumn 1996, the Cabinet of Ministers consisted of:

Prime Minister	Utkur Sultanov
First Deputy Prime Minister	Ismail Dzhurabekov
Deputy Prime Minister and Minister of Finance	Bakhtiar Khamidov
Deputy Prime Ministers	Viktor Chzhen, Saidmukhtar Siadkasymov, Rustam Yunusov, Mirabor Usmanov, Kayim Hakkukov, Dilbar Gulomova, Rim Giniyatulin
Minister of Agriculture	Marks Jumaniyozov
Minister of Communications	Abduvokhid Dzhurabacv
Minister of Defence	Rustam Akhmedov

<sup>4</sup> Some sources say March 26, and others March 27.

Minister of Education	Dzhurah Yuldashev
Minister of Foreign Affairs	Adulaziz Komilov
Minister of Health	Shavkat Karimov
Minister of the Interior	Zakirzhon Almitov
Minister of Justice	Sirojiddin Mirsafoev
Minister of Labour	Okilzhon Obidov
Minister of Power	Valery Olayev

- (5) The legislative authority is the parliament, known as the Oliy Majlis; it is unicameral and has 250 members elected for a term of five years. The next elections are due in December 1999.
- (6) The Oliy Majlis is controlled exclusively by the People's Democratic Party (the former Communist Party, and headed by Islami Karimov until June 1996 when concerns about the political neutrality of the presidential office forced him to resign the party post). Other parties include the Adolat Social Democratic Party (government-sponsored), Istiklol Yoli (government-sponsored), Birlik (banned), Erk (banned) and the Islamic Renaissance Party (banned).
- (7) Whilst the Oliy Majlis has legislative responsibility, in practice most law-making is done by means of presidential or ministerial decree. Without the disciplines imposed by thorough parliamentary drafting, this can give rise to a body of legislation which is inconsistent, confusing, and even at times whimsical.
- (8) The next tier of government is centred on the twelve regions: Andijan, Bukhara, Djizak, Kashkadarya, Navoi, Namangan, Samarkand, Surkhandarya, Syrdarya, Tashkent, Fergana, and Khorezm. A thirteenth region is added by the inclusion of the semi-autonomous Republic of Karakalpakstan, situated in the north-west of the country, which elects its own legislature. Below this, the administrative districts consist of 163 rural wards and 119 towns/cities. Executive responsibility at regional level is given to officials called Khokhims who are the personal appointees of the President.
- (9) At the very lowest community level, the end of the Soviet era has seen the re-emergence in urban areas of the traditional mahallas - these are small community collectives which perform social as well as minor administrative functions, ranging from the planting of trees and shrubs, through the provision of advice and the channelling of assistance to poor families, to child-minding, mediation in disputes, and assisting in arranging funerals, weddings and so on.

## 2.1.4 Economic strategy

- (1) Since Independence, the Government has strongly resisted the temptation to adopt 'shock-therapy' tactics in moving to market reforms, preferring instead to take a measured, step-by-step approach and to maintain full control over the process. This policy has not been driven only by economic concerns, but also by a desire for national and social cohesion. There is a firmly-held view that economic reform should not be undertaken for its own sake, but for the benefit of the nation's citizens; reform will happen only at a pace with which the people are comfortable. Underpinning this belief, of course, is a fear that economic disarray will provide a breeding-ground for civil unrest and political opposition.
- (2) Whether a consequence of this strategy or not, it remains the case that Uzbekistan's real Gross Domestic Product (GDP) has not suffered the same sharp declines since 1991 which most of the other fourteen former Soviet republics have endured. Only Estonia has done better, with 1995 GDP running at 94.1% of 1991 levels compared to Uzbekistan's 91.5%. For the whole of the former Soviet Union (FSU) the figure is 66.7%. Table 2-1 provides full details.
- (3) The strategy is built around President Karimov's so-called Five Principles which provide the framework for developing what he calls the Social Market Economy. These Principles are:
  - 1) Internal and external economic relations should be free of ideology, with the economy taking precedence over politics.
  - 2) Central and local authorities are responsible for the success of market-oriented measures and for creating conditions favourable to entrepreneurship. The Presidential Decree of January 21 1994 forbade any interference by state entities in the commercial or economic activities of enterprises and organisations<sup>5</sup>.
  - 3) The new constitution and laws passed in conformity with international law apply to everyone, without exception. Foreign investors operate under the same conditions as Uzbeks.
  - 4) A free market is not an end in itself. The ultimate objective is to achieve economic prosperity and raise living standards.
  - 5) The goal of reforms is to ensure the gradual changeover to a full-scale market economy.
- (4) Translating these principles into practicable policies, and determining priorities within severe budget constraints, is a complex task. It is made no easier by the conditions being applied by funding organisations such as the International Monetary Fund; release of credit often depends on certain targets being met which may not be compatible with the strategy Uzbekistan wishes to pursue.

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<sup>5</sup> It is a matter of debate whether this decree is honoured more in the breach than in the observance.

- (5) Sources extremely close to the Government believe there are five policy priorities: maintaining a healthy budget, with deficits not to exceed 3% of GDP; implementing structural reforms (i.e. changing the composition of output) to break away from the colonial inheritance of the Soviet Union; mass privatisation; sustaining a stable and robust currency, for which the structural reform is a pre-requisite; and the development of security markets. It is acknowledged that there are potential conflicts between these objectives.

## 2.1.5 Economic performance

- (1) Table 2.1.5-1 shows GDP and GDP per capita for all 15 of the former Soviet republics since 1989, calculated on a comparative basis using dollar purchasing power parities - they are not therefore indicative of absolute values. As already stated, Uzbekistan has suffered one of the lowest declines in GDP, but GDP per capita has fallen more steeply because of the continuously increasing population.
- (2) Expressed in current prices (and using official exchange rates), GDP performance since 1991 is shown in Table 2.1.5-2. These figures give a more accurate picture of the absolute order of GDP, whereas the figures in Table 2.1.5-1, however, should be regarded as being a better measure of rates of change.

**Table 2.1.5-2 Uzbekistan GDP in Current Prices, 1991-1995**

Indicator	1991	1992	1993	1994	1995
Actual GDP (Roubles x 10 <sup>6</sup> )	61	444	5095		
Actual GDP (Soms x 10 <sup>6</sup> )				64.9	298.5
Exchange Rate (Rb/Som:\$)	22.0	220.0	930.0	25.0	30.0
Actual GDP (\$ x 10 <sup>6</sup> )	2.8	2.0	5.5	2.6	10.0

Source: Goscomprognozstat; EIU

- (3) The sources of GDP are shown in Table 2.1.5-3. It is unfortunate that the category 'other' is not broken down further in view of its large and increasing contribution to output at the expense of industry, construction and agriculture.



Table 2.1.5-1 Former Soviet Republics: Gross Domestic Product (GDP) at Real \$ Purchasing Power Parities

		1992		1993		1994		1995		1996		1996 as % of 1991	
			%		%		%		%		%		
Armenia	GDP (\$m)	14943	14457	-3.25	13713	-5.15	6721	-50.99	5875	-12.55	6068	3.29	47.62
	GDP Per Head (\$)	4294	4084	-4.89	3798	-7.00	1821	-52.05	1550	-14.88	1709	10.26	49.13
	Population (m)	3.48	3.54	1.72	3.61	2.00	3.69	2.22	3.79	2.70	3.55	-6.32	96.90
Azerbaijan	GDP (\$m)	21777	20049	-7.95	20705	3.27	16466	-20.47	12992	-21.10	10376	-20.14	42.53
	GDP Per Head (\$)	3076	2804	-8.84	2872	2.43	2228	-22.42	1760	-21.01	1389	-21.08	42.58
	Population (m)	7.08	7.15	1.00	7.21	0.83	7.39	2.51	7.38	-0.12	7.47	1.20	99.88
Belarus	GDP (\$m)	50135	50598	0.92	51991	2.75	48292	-7.11	43800	-9.30	35160	-19.73	62.39
	GDP Per Head (\$)	4501	4932	0.63	5062	2.44	4684	-7.47	4228	-9.74	3397	-19.65	61.62
	Population (m)	10.23	10.26	0.25	10.27	0.11	10.31	0.38	10.36	0.48	10.35	-0.05	101.25
Estonia	GDP (\$m)	8072	7583	-6.06	6932	-8.58	6111	-11.84	5731	-6.22	6136	7.07	54.17
	GDP Per Head (\$)	5122	4790	-6.48	4390	-8.35	3958	-9.84	3803	-3.92	4070	7.09	59.56
	Population (m)	1.58	1.58	0.45	1.58	-0.26	1.54	-2.22	1.51	-2.40	1.51	0.04	94.49
Georgia	GDP (\$m)	23428	21394	-8.67	19143	-10.35	11762	-39.66	7352	-37.52	5263	-28.41	26.72
	GDP Per Head (\$)	4295	3919	-8.84	3533	-9.85	2169	-38.78	1349	-37.63	966	-28.39	26.51
	Population (m)	5.45	5.46	0.15	5.43	-0.56	5.44	0.19	5.45	0.18	5.45	-0.03	100.41
Kazakhstan	GDP (\$m)	71934	74399	3.43	68245	-8.27	61005	-10.61	54517	-10.64	41589	-23.71	54.91
	GDP Per Head (\$)	4371	4477	2.43	4081	-8.85	3612	-11.45	3214	-11.02	2442	-24.02	55.65
	Population (m)	16.46	16.62	0.98	16.72	0.63	16.89	1.00	16.96	0.43	17.03	0.40	102.26
Kyrgyzstan	GDP (\$m)	11641	11879	2.59	11737	-1.20	9045	-22.94	7795	-13.82	5875	-24.63	48.12
	GDP Per Head (\$)	2550	2706	6.12	2637	-2.55	2014	-23.63	1721	-14.55	1291	-24.99	46.37
	Population (m)	4.33	4.39	1.39	4.45	1.39	4.49	0.90	4.53	0.85	4.55	0.47	103.31
Latvia	GDP (\$m)	14344	14633	0.61	13635	-6.82	9107	-33.21	7951	-12.66	8180	2.88	60.26
	GDP Per Head (\$)	5447	5480	0.61	5126	-6.46	3463	-32.44	3070	-11.35	3208	4.50	63.38
	Population (m)	2.67	2.67	0.01	2.66	-0.39	2.63	-1.13	2.59	-1.52	2.55	-1.55	95.08
Lithuania	GDP (\$m)	27288	26444	-3.36	23996	-9.99	16027	-33.21	13730	-14.33	14181	3.28	62.66
	GDP Per Head (\$)	7959	7162	-11.31	6416	-10.42	4285	-33.21	3681	-14.10	3812	3.56	63.12
	Population (m)	3.69	3.72	0.82	3.74	0.53	3.74	0.01	3.73	-0.28	3.72	-0.26	99.32
Moldova	GDP (\$m)	16941	16423	-3.02	15029	-8.37	10956	-27.15	10300	-6.33	8195	-20.44	53.98
	GDP Per Head (\$)	3688	3778	2.44	3462	-6.35	2528	-26.95	2362	-6.57	1884	-20.24	53.56
	Population (m)	4.35	4.36	0.25	4.36	-0.01	4.35	-0.23	4.35	0.25	4.35	-0.25	100.90
Russia	GDP (\$m)	156913	175530	11.83	165040	-5.73	759951	-12.15	711875	-6.33	636240	-10.62	72.37
	GDP Per Head (\$)	5801	5904	1.76	5821	-1.41	5111	-12.20	4793	-6.22	4290	-10.40	72.56
	Population (m)	147.72	148.30	0.39	148.61	0.21	148.69	0.06	148.52	-0.11	148.31	-0.15	99.74
Tajikistan	GDP (\$m)	9919	10176	2.59	9832	-3.38	7183	-26.94	6551	-8.80	5266	-19.62	48.05
	GDP Per Head (\$)	1915	1920	0.26	1810	-5.73	1287	-28.90	1162	-9.71	916	-21.17	45.03
	Population (m)	5.18	5.30	2.32	5.43	2.49	5.58	2.75	5.64	1.01	5.75	1.97	106.80
Turkmenistan	GDP (\$m)	10018	10654	6.35	10559	-0.92	10275	-2.69	9488	-7.66	7762	-18.19	64.04
	GDP Per Head (\$)	2728	2903	6.35	2823	-2.78	2683	-4.96	2420	-9.80	1910	-19.83	57.03
	Population (m)	3.58	3.67	2.50	3.74	1.92	3.83	2.39	3.92	2.38	4.00	2.05	112.25
Ukraine	GDP (\$m)	240364	247613	0.51	223010	-9.94	197750	-11.33	165400	-14.84	130360	-22.59	52.85
	GDP Per Head (\$)	4765	4772	0.15	4293	-10.13	3759	-11.51	3264	-14.08	2539	-22.21	53.37
	Population (m)	51.70	51.83	0.25	51.95	0.22	52.05	0.20	51.59	-0.88	51.34	-0.48	96.03
Uzbekistan	GDP (\$m)	41809	41465	-0.82	49117	17.23	44856	-10.65	44928	0.14	44749	-0.40	91.52
	GDP Per Head (\$)	2228	2312	3.77	3350	1.64	2968	-12.00	2955	-0.43	2902	-2.58	84.64
	Population (m)	20.11	20.53	2.08	20.90	1.81	21.70	3.80	21.86	0.77	22.35	2.24	108.13
Total FSU	GDP (\$m)	1407227	1442671	1.57	1402792	-3.23	1215562	-13.26	1111285	-8.58	965400	-13.13	66.70
	GDP Per Head (\$)	4962	5069	0.56	4826	-3.65	4158	-13.24	3803	-8.54	3393	-13.15	66.25
	Population (m)	287.60	289.38	0.62	299.66	0.44	292.32	0.57	292.20	-0.04	292.26	0.03	100.68
Total CA (Os, Ky, Ts, Tj, U)	GDP (\$m)	147721	154573	4.64	148490	-3.29	123274	-11.45	123279	-0.02	105241	-14.43	67.51
	GDP Per Head (\$)	2975	3060	2.88	2917	-4.68	2522	-13.54	2338	-7.47	1969	-15.86	63.72
	Population (m)	49.66	50.51	1.71	51.25	1.48	52.49	2.42	52.91	0.81	53.68	1.46	105.96
Total CA + Russia	GDP (\$m)	1604634	1630123	1.54	1614533	-1.51	1335836	-11.65	1235154	-6.41	1071841	-11.32	71.66
	GDP Per Head (\$)	5090	5181	1.80	5076	-0.13	4426	-11.63	4146	-6.53	3671	-11.46	70.72
	Population (m)	197.38	198.81	0.72	199.85	0.52	201.11	0.66	201.44	0.13	201.99	0.28	101.35

FSU = Former Soviet Union  
CA = Central Asia

**Table 2.1.5-3 Sources of Uzbekistan GDP, 1991-1995**

Source of GDP	1991 (%)	1992 (%)	1993 (%)	1994 (%)	1995 (%)
Industry	26.4	26.6	22.4	17.0	16.5
Construction	10.4	9.5	9.0	7.2	7.8
Agriculture	37.2	35.4	27.9	34.5	28.5
Trade	3.9	5.6	6.2	7.5	5.6
Transport/Comms	4.2	5.2	5.5	5.8	8.4
Other	17.9	17.7	29.0	28.0	33.2
<b>Total:</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Goscomprognostat

- (4) Although slight growth had originally been hoped for in 1996, the Government was suggesting mid-year that there would be no increase over 1995; and that the aim for the remainder of the year was to limit contraction to 1%.
- (5) Official figures, of course, take no account of what happens in the black economy. Its extent is not quantifiable, but is sufficiently widespread as to be observable even by an untutored eye. This would suggest that the official figures are a slight under-estimate of the actual performance of the economy.
- (6) Inflation is gradually being brought back under control from its peaks in 1992 and 1993. The target, set by the IMF, of an annual rate of 21-25% by the end of 1996 was not achieved. Estimates suggest that the final outcome figure will be between 55% and 65%. Table 2.5.1-4 shows recent inflation performance.

**Table 2.15.-4 Uzbekistan Consumer Price Inflation 1991-1996**

Indicator	1991	1992	1993	1994	1995	1996 (Est)
Consumer Price Inflation (% per annum)	105	4671	4169	1568	305	55-65

Source: EIU

- (7) Official exchange rates continue to over-value the Sum, as evidenced by a thriving black cambio. Table 2.1.5-5 charts recent differences between the two:

**Table 2.1.5-5 Uzbekistan Exchange Rates**

Sum/\$	March 1995	October 1995	July 1996	October 1996	December 1996	January 1997
Official Rate	25.0	34.4	38.0	40.5	56.1	60.6
Black Cambio	40.0	47.0	51.0	70.0	100.0	100.0

Source: Study Team; UNDP; EIU

- (8) The artificially high official rate does, of course, allow the Government to subsidise, imports, particularly of grain; but it also encourages those with access to official exchange to import foreign consumer goods. As the Government would prefer people to spend their

money within Uzbekistan, rather than “buying Dutch cheeses” (to quote a senior official), it has imposed a number of restrictions including a 15% duty on goods brought in by hand, as well as the suspension of the foreign exchange licence of ten banks.

- (9) Uzbekistan’s trade balance moved into deficit during the first half of 1996 and is expected to remain negative by year end. In the first quarter, the deficit was approximately 10% of GDP at \$264 million; this equated to 41% of the quarter’s exports and 29% of imports. Major contributors to the deficit have been a domestic grain shortage requiring imports to bridge the gap, coupled with a decline in world cotton prices. The composition and sources of trade are shown in the tables below:

**Table 2.1.5-6 Composition of Uzbekistan Exports, 1994-1996**

Commodity	1994 (%) (1)	1995 (%) (1)	1995 (%) (2)	Jan-Jun 1996 (%) (2)
Cotton	48.9	57.9	58.2	59.9
Minerals/Chemicals	25.1	17.1	2.2	4.6
Metals	3.7	5.6	5.1	3.9
Other (3)	22.3	19.4	34.5	31.6
Total	100.0	100.0	100.0	100.0
Value (\$ x 10 <sup>6</sup> )	2690	3109		

Source: Goscomprognostat

- Notes
- (1) Figures from Goscomprognostat’s Uzbekistan Information Digest, 1991-1995
  - (2) Figures from Goscomprognostat’s Basic Results of Social and Economic Development of the Republic of Uzbekistan, January-June 1996: Brief Statistical Digest.
  - (3) Includes, for example, oil, gas and services.

**Table 2.1.5-7 Composition of Uzbekistan Imports, 1994-1996**

Commodity	1994 (%) (1)	1995 (%) (1)	1995 (%) (2)	Jan-Jun 1996 (%) (2)
Foodstuffs	32.6	18.2	35.5	33.3
Minerals/Chemicals	23.7	9.4	12.3	9.4
Machines/Equipment	15.4	47.9	29.9	36.5
Metals	8.4	5.7	5.4	5.6
Other (3)	19.9	18.8	16.9	15.2
Total	100.0	100.0	100.0	100.0
Value (\$ x 10 <sup>6</sup> )	2610	2893		

Source: Goscomprognostat

- Notes
- (1) Figures from Goscomprognostat's Uzbekistan Information Digest, 1991-1995
  - (2) Figures from Goscomprognostat's Basic Results of Social and Economic Development of the Republic of Uzbekistan, January-June 1996: Brief Statistical Digest.
  - (3) Includes, for example, oil, gas and services.

**Table 2.1.5-8 Primary Destinations of Uzbekistan Exports, 1994-1995**

Country	1994 (%)	1995 (%)
Russia	29.0	18.8
Kazakhstan	11.6	7.7
Tadjikistan	8.4	5.0
Switzerland	8.3	13.7
United Kingdom	6.5	7.6
Turkmenistan	6.5	4.8
Netherlands	5.7	5.0
Kyrgyzstan	3.8	2.2
Turkey	1.6	3.5
Korea	1.5	4.7
Value (\$ x 10 <sup>6</sup> )	2690	3109

Source: Goscomprognostat

**Table 2.1.5-9 Primary Origins of Uzbekistan Imports, 1994-1995**

Country	1994 (%)	1995 (%)
Russia	29.9	24.9
Switzerland	12.3	4.1
Kazakhstan	7.4	7.5
Germany	6.8	13.0
Tadjikistan	6.3	2.5
Turkmenistan	5.5	3.4
Hungary	3.3	5.0
Korea	1.0	14.9
Value (\$ x 10 <sup>6</sup> )	2610	2893

Source: Goscomprognostat

- (10) Two points in the above tables are noteworthy. First, the trend in both imports and exports has been towards a shift away from former Soviet Union countries, although

Russia remains the leading trading partner on both accounts; this trend was continuing during the early part of 1996. The second concerns the large increase in the import of machinery and equipment since 1994; whilst much of this was probably connected with the construction of the Daewoo plant at Asaka (corresponding with the increase in imports from Korea), there is also a suspicion that it also masks a rise in the import of consumer goods.

- (11) Fiscal policy, agreed with the IMF, requires the budget deficit to be less than 4% of GDP. Figures released for the first quarter of 1996 suggest that in fact the Government was running a surplus of 286 million Sum. Inexplicably, however, this appears to have been achieved by abolishing expenditure on, inter alia, social protection.
- (12) Data on 'privatisation' is unreliable, the problem being mainly one of definition<sup>6</sup>. Official statistics divide the economy into 'state' and 'non-state' sectors, the latter being further sub-divided into six categories of which one is 'private'. This latter category accounted for just 6.6% of national income in 1995 and 3% of the employment. Claims that there is widespread 'privatisation' (qua outcome - see footnote) of the means of production are misleading: the simple reality is that most of the enterprises in the 'non-state' sector retain a significant, or even a majority, state holding<sup>7</sup>. Those enterprises which can truly pronounce themselves to be private are mostly small businesses in the transport, catering, retail, construction and agricultural sectors.
- (13) It is certainly the case that ownership of assets unconnected with the means of production has passed into private hands. People may own their own accommodation, if not the land on which it stands, and there is an increasing number of privately-owned vehicles to be seen on the roads. There are, however, no private or independent newspapers, with all media being strictly controlled.
- (14) The development of security markets proceeds under the supervision of a Commission established by Ministerial Decree of March 30 1996. The Commission's objectives are to establish the market infrastructure, regulate the activities of participants, and stimulate market activity. The Stock Exchange now has eight regional branches, and there are reported to exist over 100 broker's offices and 49 share-shops. Volume of business is said to have reached the order of 60 to 100 million Sums per week, which means that the Commission still has much work to do for the future.
- (15) In summary, therefore, the Uzbekistan economy as measured against Government policy objectives is a curate's egg - good in parts. There are many and difficult

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<sup>6</sup> The word 'privatisation' can be used to describe either an outcome (what was once state-owned is now privately owned) or a process (the set of stages necessary for the transition from state to private ownership) or even the act of undertaking that process. Much more precise terminology is needed if discussion on this issue is not to fall foul of Mr. Karimov's First Principle!

<sup>7</sup> Research is not aided by confusing presentation from Goscomprognozstat, whose Schedule N3 of the 1995 Information Digest has a table of figures wholly contradicted by the accompanying bar-chart.

challenges ahead which will require skill, courage and determination to overcome.

## 2.2 SOCIAL ASPECTS

### 2.2.1 Demography

- (1) Uzbekistan's population has been increasing for at least the last 57 years. Currently standing at 23.007 million people, it was growing at the beginning of 1996 at a natural rate of 2.34 %, compared to 2.28% a year previously.
- (2) To offset the natural increase, there has been a net emigration from the Republic since 1990; between then and 1993, estimates of the total number of emigrants vary from the official 274,000 to 4,000,000. In 1995, emigration had fallen back to a rate of just under 0.4% of the population or about 90,000 per annum. The majority of the emigrants were and are Slavics, perhaps concerned about the future economic direction of Uzbekistan, but also, perhaps, about ethnic and social factors such as the proposed replacement of the Cyrillic script with the Latin alphabet, and the exclusive use of the Uzbek language in the nation's schools.
- (3) Most of the population (61.8%) lives in rural areas. Indeed, this has been an increasing trend; in 1985, 59.3% of the people were living in rural areas, and in 2000 the proportion is estimated to grow to 64.7%. The split between genders is 50.4% female, 49.6% male.
- (4) There are, of course, regional differences in the natural population growth rates. Perhaps unsurprisingly, Tashkent City showed the lowest growth in 1994; the highest rates were recorded in Kashkadarya and Surkhandarya where the proportion of the rural population is also amongst the highest.

**Table 2.2.1-1 Uzbekistan: Aggregate Demographic Data, 1994-1995**

Indicator	Unit	1994	1995
Population	Thousands	22467	23007
Density	People per km <sup>2</sup>	50.4	51.2
Natural Growth	(%)	2.28	2.34
Urban Population	Thousands	8663	8789
Rural Population	Thousands	13805	14218
Males	Thousands	11138	11412
Females	Thousands	11329	11596

Source: Health Ministry, Republic of Uzbekistan

**Table 2.2.1-2 Uzbekistan: Demographic Data by Region, End-1994**

Region	Population (thousands)	Growth (%)	Density (People per km <sup>2</sup> )	Rural Proportion (%)
Tashkent City	2118	0.89	6382	-
Andijan	1973	2.28	475	70
Bukhara	1307	2.23	33	67
Djizak	864	2.77	42	68
Kashkadarya	1893	2.90	68	74
Navoi	731	2.27	7	60
Namangan	1715	2.62	220	62
Samarqand	2399	2.66	148	71
Surkhanda'ya	1512	2.89	74	79
Syrdarya	620	2.20	123	69
Tashkent	2251	1.80	146	58
Fergana	2419	2.43	334	70
Khorezm	1185	2.43	190	75
Karakalpakstan	1384	1.93	9	51

Source: UNDP; Health Ministry, Republic of Uzbekistan

5) In 1995, the ethnic split of Uzbekistan was recorded by Goscomprognozstat as under:

**Table 2.2.1-3 Uzbekistan: Ethnic Groupings, 1995**

Nationality	1995 (%)
Uzbek	75.8
Russian	6.0
Tadjik	4.8
Kazakh	4.1
Tartar	1.6
Kyrgyz	0.9
Turkmen	0.6
Ukrainian	0.6
Other	5.6

Source: Goscomprognozstat

**Table 2.2.1-4 Uzbekistan: Demographic Data by Age Group, 1.1.94**

Age Group	Number	Proportion (%)
0	676858	3.06
1-4	2659041	12.03
5-9	3154256	14.27
10-14	2574389	11.65
15-19	2256486	10.20
20-24	1948251	8.81
25-29	1734249	7.85
30-34	1711334	7.74
35-39	1322791	5.98
40-44	954441	4.32
45-49	530452	2.40
50-54	584573	2.65
55-59	583524	2.64
60-64	493882	2.24
65-69	395282	1.79
70-74	209748	0.95
75-79	129079	0.58
80-84	100731	0.46
85-89	49174	0.22
90-94	26039	0.12
95-99	2326	0.01
>100	476	0.00

Source: Health Ministry, Republic of Uzbekistan

- (5) A particularly significant feature of Uzbekistan's population is that, in 1994, 41% were under the age of 15, and 68% were under the age of 30, as shown in Table 2.2.1-4. This has important implications not only for the need for future employment, but also in socio-political terms: a young, largely well-educated populace will have both economic and social aspirations which they will be looking to the Government to deliver. In terms of employment, and assuming that the retirement age remains at its present 55 for women and 60 for men, in 2010 there will be 18.5 million people of working age, compared to 11.3 million in 1994 (although not all of these will necessarily be seeking employment<sup>8</sup>). It will be an enormous challenge for the Government to encourage job creation on this scale.

## 2.2.2 Employment and wages

- (1) Under the former Soviet system, everyone of working age was guaranteed a job. Many who have experienced the traumas of unemployment in a capitalist system would argue that this was a positive and beneficial policy, giving people a sense of participation in the community. As a result, unemployment did not officially exist in the Soviet Union, except in as much as there existed people who simply did not want to work for whatever reason. In practice, though, there were large numbers of 'employed' people for whom there was little or no work to do.

<sup>8</sup> There will, for example, be students in full-time further education, women on maternity leave, and so on. Also, under the present system, many people are permitted to retire up to ten years early if their job has been deemed to be particularly dangerous.



- (2) This situation remains true in Uzbekistan today. The Government data are reproduced in Table 2.2.2-1. Even official unemployment has been rising steadily since 1992, but it is almost impossible to assess what the true rate is. A recent UNDP study calculated the 1994 rate to be 3.7% of the working-age population, or 403,000 compared to the official figure of 21,800. In reality, the figure is probably even higher still.

**Table 2.2.2-1 Uzbekistan: Employment and Unemployment, 1992-1996**

Indicator	1992	1993	1994	1995	June 1996
Employed (Thousands)	8271.0	8259.0	8150.3	8157.5	c.8200.0
Registered Unemployed (Thousands)	8.8	13.3	21.8	25.4	41.0

Source: Goscomprognozstat

- (3) The sectors in which employment takes place are shown in Table 2.2.2-2. Of interest is the growth in the proportion of people working in agriculture.

**Table 2.2.2-2 Uzbekistan: Breakdown of Employment by Sector**

Sector	1991 (%)	1995 (%)
Agriculture	41.9	45.7
Health, Education, Science	18.7	19.1
Industry	14.3	12.4
Construction	8.2	6.0
Trade	7.4	9.1
Transport, Communications	3.0	2.7
Housing, Public Services	2.3	2.3
Other	4.2	2.7
Total	100.0	100.0
State-Owned	61.1	33.9
'Non-State'-Owned	38.9	66.1

Source: Goscomprognozstat

- (4) Data on average wages are hard to come by. The following table shows average monthly wages in the industrial sector. By comparison, the wage-rates of staff working in the Electrical Apparatus shop of the Tashkent Railway Workshop in December 1996 ranged from 3009 Sum per month for support workers to 7808 Sum per month for skilled technicians. The average wage in the Workshop as a whole during 1996 for indirect workers was 4495 Sum per month, for direct workers 6695 Sum per month, and for all workers 5732 Sum per month.

**Table 2.2.2-3 Uzbekistan: Average Monthly Earnings (Industry)**

Indicator	Q3 1994	Q4 1994	Q1 1995	Q2 1995	Q3 1995	Q4 1995	Q1 1996
Monthly Earnings (Sum)	480	660	973	1475	1551	2118	2244

Source: EIU

### 2.2.3 Other social indicators

- (1) For a full exposition of the social climate within Uzbekistan today, the reader is cordially invited to refer to the UNDP's Human Development Report (1996), from which most of the following table is drawn. It offers a fascinating vignette, with which to close this chapter, of social conditions within the republic.

**Table 2.2.3-1 Uzbekistan: Selected Social Data**

Indicator	1991/92	1993	1994
Crimes Committed	93626	90022	73561
Road Accident Injuries (per 100,000 people)	17.3	12.1	5.1
Emissions of NO <sub>2</sub> and SO <sub>2</sub> (Kilos per capita)	25.7	24.2	24.2
Life Expectancy (All - Years)	69.3	N/A	70.4
Life Expectancy (Women - Years)	72.4	N/A	75.7
Abortions (per 100 women)	39	28	23
Newspapers (per 100 people)	17	13	12
Population per Doctor	282	282	296
Adult Literacy Rate (%)	N/A	97.7	98.7
Televisions (per 1000 people)	144	130	115
Radios (per 1000 people)	172	148	135
Telephones (per 1000 people)	76	72	71
International Telephone Calls (per capita)	3.7	3.1	3.1
Private Cars (per 1000 people)	33	41	40
Marriages (per 1000 people)	N/A	N/A	7.9
Divorces (per 1000 people)	N/A	N/A	1.1
Enrolment in Tertiary Education (Thousands)	43.5	28.7	25.0
Alcohol Consumption (Litres per adult)	3.4	2.5	1.7
Tobacco Consumption (Kilos per adult)	1.4	0.2	0.1
Average Urban Family Size	N/A	N/A	5.5
Average Rural Family Size	N/A	N/A	5.4
Proportion of Total Land Area Cultivated (%)	9.9	10.0	10.2

Source: UNDP; Health Ministry, Republic of Uzbekistan N/A = Not Available

## CHAPTER 3 TRANSPORTATION CONDITION IN UZBEKISTAN

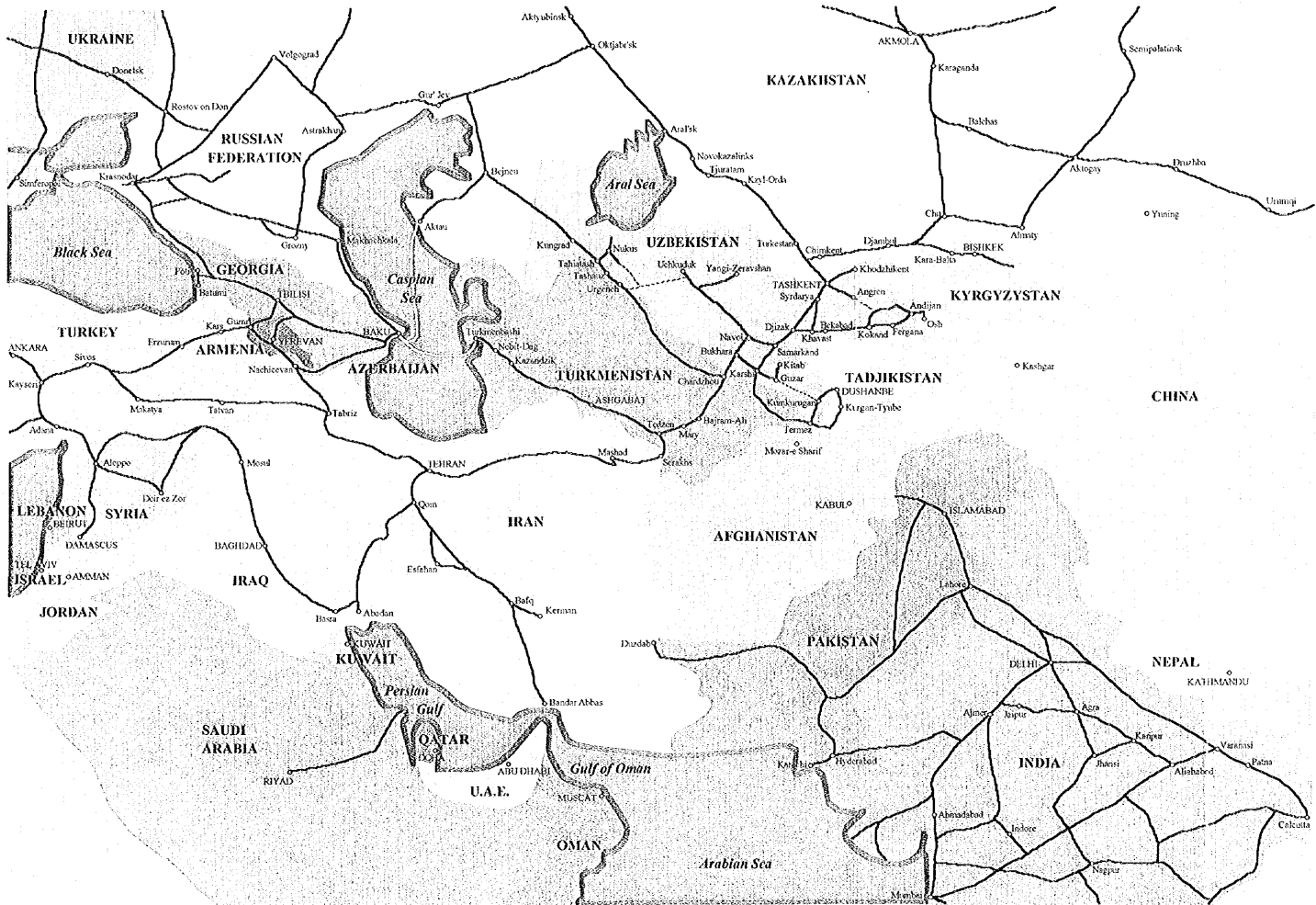
### 3.1 DEVELOPMENT OF TRANSPORT IN FORMER SOVIET UNION<sup>9</sup> AND AFTER DEMISE OF SOVIET UNION

- (1) With the demise of the Soviet Union, all forms of transport have undergone, and continue to undergo, significant change in all of the former republics. To varying degrees, the centrally planned command economy has given way to new systems characterised by four distinct features. First, economic activity has become decentralised both structurally as well as in terms of its geographical spread. Secondly, government has tended to withdraw from direct operational involvement in transport whilst retaining a regulatory role. Thirdly, there has emerged, to a greater or lesser extent, an element of competition between and within modes of transport. And fourthly, new ways of financing transport are having to be sought
- (2) Three major forces shaped the development of transport in the Soviet Union: geography, politics and economics.
- (3) Geography
  - 1) As far as geography is concerned, it was both the sheer size of the Union, as well as its features, which influenced the shape of transport. About 75% of the population lived west of the Urals, whilst most of the natural resources and energy reserves were to be found to the north and east in the inhospitable climate of the tundra.
  - 2) Rivers, seas and ports can be frozen for up to nine months each year, limiting the value of coastal shipping<sup>10</sup>. Moreover, with the trade routes being predominantly east-west, the development of inland shipping was hampered by the fact that many of the rivers run south-north; in Central Asia, the two main rivers flow only into the inland (and now troubled) Aral Sea. As a result, all forms of water transport (including international shipping as well as inland waterways) accounted for only 9% of all freight tonnage in 1989, dropping to 2.6% in 1992. In the Uzbek SSR, river transport for freight was (and remains today) negligible, accounting for no more than 0.1% of the tonnage.
  - 3) Permafrost affects nearly half of the Union's land mass, rendering agriculture and the construction of factories in these areas difficult if not impossible, and thereby militating against the development of local economies.
  - 4) It is in conditions such as these, where bulk commodities and materials need to be moved over long distances, that rail transport has traditionally dominated other modes.

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<sup>9</sup> Parts of this section are drawn from Strong J and Meyer J, *Moving to Market: Restructuring Transport in the Former Soviet Union*, Cambridge MA, 1996

<sup>10</sup> In 1990, coastal shipping in the Arctic and Far East regions conveyed just under 29 million tonnes; the cost of ice-breaking worked out at around 4.5 roubles per tonne.





(4) Politics and economics

- 1) The political and economic influences on the development of transport are closely connected.
- 2) At the end of the nineteenth century, it was often foreign trade and investment which determined the network, although there were also military and imperial factors at play<sup>11</sup>. Two railway lines were constructed specifically to service grain exports, one from Central Russia to the Baltic, and the other from Southern Russia and the Ukraine to the Black Sea. Even as early as 1904, an oil pipeline had been built from Baku to the Black Sea.
- 3) In addition, significant foreign capital investment (principally from Britain, France and Germany) was being undertaken in the years leading up to the First World War, mostly in the prime industries such as steel and oil production. Whilst this in itself necessarily included developments of the associated transport infrastructure, such foreign investment sat uncomfortably alongside the fundamental principles of the 1917 Bolshevik revolution which saw it as exploitation. Economic independence and self-sufficiency for the Union became the post-revolutionary watchwords.
- 4) Such independence - some might say isolation - brought with it three effects on the transport system. First, the *raison d'être* of the railways shifted away from conveying exports and moved instead to the domestic task of supplying factories with raw materials culled from the middle of the country<sup>12</sup>. Secondly, the far east of the country, denied access to sources of supply in Japan, Korea and China, needed to be connected to the centres of production in the west; this was also a task which fell mainly to the railways. Finally, the introspective nature of the Union meant that the advances in road transport and infrastructure taking place elsewhere in the world largely passed it by.
- 5) Furthermore, the policies adopted by Stalin of concentrating resources on heavy industry at the expense of consumer goods also favoured the railways; in the absence of a need to distribute high-value consumer goods, there was little incentive to develop a quality road infrastructure.
- 6) In short, therefore, the transport system that evolved in the Soviet Union was dominated by rail, had an emphasis on east-west corridors, and had a bias towards serving the needs of western Russia in preference to those of the other fourteen republics.

(5) By 1990, just before the demise of the Union, rail handled almost exactly 50% of all

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<sup>11</sup> It is suggested, for example, that one of the lines around Bukhara was originally designed in order for Tsar Nicholas to reach his new palace there.

<sup>12</sup> The location of factories tended to be near the large Russian cities, rather than near the source of their raw material; moreover, the precise location would often be as much a political decision as an economic one. For example, the processing into clothing etc. of the raw cotton produced by the Uzbek SSR was mainly undertaken in European Russia, a policy designed to prevent the concentration of too much economic power in one place.

freight tonne-kilometres, and pipelines just under 40%. Road accounted for just 7%, but in contrast conveyed 61% of the tonnage; this suggests that the average lorry load travels a comparatively small distance. In the same year, freight transport accounted for 9.1% of the Union's GDP compared to around 7% in the USA, whereas tonne-kilometres per unit of GDP were some six times greater than in the USA.

- (6) So far, this commentary has focused exclusively on freight transport within the Soviet Union. This is no accident. Comparatively speaking, and with the exception of travel within the large conurbations<sup>13</sup>, Soviet citizens enjoyed low levels of mobility - about half that of their Western European counterparts. Further details about passenger transport appear later in this chapter under the appropriate sector headings.
- (7) It is in the context of the development of transport within the Soviet Union, that the condition of Uzbekistan's own transport systems must be viewed. Historically, subservience to the Union entailed that Uzbekistan's transport links were focused northwards. Today, however, the requirements of the economy dictate that effective links are forged with the other points of the compass. Following an ordinance of the Cabinet of Ministers dated 15 April 1996, an Intergovernmental Working Group was established to address this very issue. The group convened for the first time on 11 September 1996 to flesh out its terms of reference and working procedures.
- (8) Already, a westwards corridor has been tentatively established to the Black Sea port of Poti, crossing Turkmenistan, the Caspian Sea, Azerbaijan and Georgia. This is the shortest existing route to the sea (a straight line distance of around 1,800km from the Uzbek border), and it is this corridor that the European Union hopes to develop, for both road and rail, under the auspices of its TRACECA (Transport Corridor Europe Caucasus and Asia) project. At present, the route cannot be considered reliable; whilst some semblance of stability may have returned to the Caucasus, Georgia, in particular, suffers from a shortage of electricity to power its locomotives<sup>14</sup>. Bureaucratic bottlenecks give rise to delays, and there are handling problems associated with the ferry element, particularly at Turkmenbashi (formerly Krasnovodsk) where the port infrastructure is in very poor condition. For road transport, fuelling, rest and refreshment facilities are few and far between.
- (9) Equally, to the south-west, a rail route has been opened to the Iranian port of Bandar Abbas; inaugurated on 13 May 1996, it commenced operation in October. However, up until December, only around 15,000 tonnes of freight had been transported, largely because the detailed terms and conditions of carriage had yet to be agreed with the authorities in Turkmenistan and Iran. A further problem, but one which the old SZD at least had become

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<sup>13</sup> Intra-urban transport was well-developed throughout the Union, with high-quality metro systems and extensive networks of tramways, bus and trolley-bus routes. Nevertheless, the surface modes are showing signs of maintenance and investment starvation; both fixed and rolling assets are ageing and falling into disrepair.

<sup>14</sup> It will be recalled from Chapter 2 that Georgia has suffered the biggest decline in economic activity of all the former Soviet republics.

quite slick at overcoming, is the change of rail-gauge at the Iranian border<sup>15</sup>. Road transport also operates to and from the port.

- (10) Eastwards, a rail connection exists via Druzhba in Kazakhstan to China, where again there is a change of rail-gauge. A notable traffic using this route is the containerised flow supplying the new Daewoo car-assembly plant at Asaka (near Andijan) with parts emanating from South Korea.
- (11) To the south and south-east, there is, in effect, no transport corridor. It is, of course, an ambition to create such a route in order a) to access the markets and producers of India and south-east Asia, and b) to provide the shortest connection to the sea at Karachi (a straight line distance of about 1500km from the Uzbek border). Whilst the road infrastructure exists at present, there has never been a rail route through Afghanistan into Pakistan and India, and the nature of the terrain would make it expensive to build one. Moreover, the hostilities and political instability which have beset Afghanistan, especially in the last ten years, seem set to continue for some time to come. The development of this particular transport corridor will therefore remain very much a long-term objective, and probably even then only as a road link<sup>16</sup>.
- (12) The tables below give an overview of the transport conditions prevailing in Uzbekistan.

**Table 3.1-1 Passenger Transport in Uzbekistan**

Mode	Unit	1994	Share (%)	1995	Share (%)	Forecast 1996	Q1 1996
Total All Modes	Pass-Kms x 10 <sup>6</sup>	27247.7	(3) 100.0	21908.8	(3) 100.0	21748.3	(2) 4971.7
Rail	Pass-Kms x 10 <sup>6</sup>	5368.0	19.7	2462.0	11.2	2464.0	610.0
(1) Road	Pass-Kms x 10 <sup>6</sup>	18915.7	69.4	16459.8	75.1	16010.3	4075.5
Air	Pass-Kms x 10 <sup>6</sup>	2864.0	10.9	2987.0	13.6	3274.0	732.0

Source: Ministry of Transport and Communications, Republic of Uzbekistan

Notes: (1) Includes Tashkent Public Transport.

(2) This total appears to be incorrect.

(3) Data from 1993 from Goscomprognostat puts the shares in that year at Rail 19.7%, Road 71.2%, and Air 9.1%. The figures for 1995 are Rail 12.1%, Road 73.2%, and Air 14.7%.

<sup>15</sup> A 1997 study for OIECF reports significant difficulties in both bogie-change and transshipment at the new Turkmenistan border facility at Serakhs, with both the design and equipment being unfit for purpose. The cost of rectification is not considered justifiable at present.

<sup>16</sup> Turkmenistan, in particular, is interested in constructing pipeline infrastructure across Afghanistan in order to aid its exports of gas. Whilst the project has little or nothing to show for it so far, it accounts for Turkmenistan's somewhat ambivalent attitude towards the Taliban movement, particularly since the latter's taking control of Kabul.



Table 3.1-2 Freight Transport in Uzbekistan, Excluding Pipelines (1)

Mode	Unit	1994	Share (%)	1998	Share (%)	Forecast 1996	Q1 1996
Total All Modes	Tonnes x 10 <sup>6</sup>	269.4	100.0	266.7	100.0	251.0	(2) 63.6
Rail	Tonnes x 10 <sup>6</sup>	40.1	14.9	46.1	17.3	40.0	10.0
Road	Tonnes x 10 <sup>6</sup>	229.3	85.1	220.6	82.7	211.0	50.0
Air	Tonnes x 10 <sup>3</sup>	12.0	-0.0	10.6	-0.0	12.7	3.6
Total All Modes	Tonne-Kms x 10 <sup>6</sup>	21967.0	100.0	19578.9	100.0	17512.9	4332.4
Rail	Tonne-Kms x 10 <sup>6</sup>	18268.0	85.9	16907.0	86.4	15000.0	3750.0
Road	Tonne-Kms x 10 <sup>6</sup>	2738.8	12.5	2231.1	11.7	2089.0	489.5
(2) Air	Tonne-Kms x 10 <sup>6</sup>	960.2	1.6	373.8	1.9	423.0	92.9

Source: Goscomprognozstat; Uzbekistan Ministry of Transport and Communications

Notes: (1) In 1994, pipelines conveyed 33.0 million tonnes (primarily gas), giving a total for all modes for the year of 302.4 million tonnes. Modal share then becomes Rail (13.3%), Road (75.8%), Pipeline (10.9%). In 1995, they conveyed 34.6 million tonnes, giving a modal share of Rail (15.3%), Road (73.2%), Pipeline (11.5%).

Please also note that there are slight discrepancies between the rail freight figures in this table and those supplied by UTJ, for which an explanation is given in Clause 6.2.1.

(2) This is thought to be an additive error, overlooking the units for air freight. Moreover, it is believed that the units for air freight tonne-kilometres should be hundred-thousands and not millions as stated.

(13) Further commentary and analysis of the figures given in Tables 3.1-1 and 3.1-2 will be given later in this chapter under the appropriate sector headings. The pattern of freight distribution clearly mirrors that of the former Soviet Union, with road transport dominating tonnage and rail dominating tonne-kilometres. We should also note at this stage that some of the data must be questionable, and therefore usable only with caution; for example, the average distance a tonne of air freight travels seems to be inordinately long (see also Note 2 in Table 3.1-2).

(14) In speaking of transport generally, one cannot ignore a theme which crops up recurrently for all modes, and in both freight and passenger markets. This theme is quality of service and focus on the customer. With the exception of international air travel, and the showpiece metro networks, the legacy of the Soviet Union is that service quality falls far short of acceptable standards. This is not always a problem of lack of investment. It is just as much a question of management and staff attitudes to the customers they are supposed to be serving.

(15) It is disappointing that few, if any, of the studies by international consultants address the

issues of service quality effectively<sup>17</sup>. As enterprises become more and more commercially independent, and as competition increases, it is only those with a genuine customer focus which will survive. Those that retain an indifferent 'take-it-or-leave-it' attitude will, deservedly, fail.

### 3.2 AIR TRANSPORT

- (1) Up to 1991, civil aviation in the Soviet Union was run by Aeroflot, a vertically integrated monopoly organisation controlling not only the operation of all passenger and freight services, but also airports, navigation<sup>18</sup> and industry regulation. In common with many large Soviet enterprises, Aeroflot also undertook a wide range of social and welfare activities for its employees. It reported to the Ministry of Civil Aviation.
- (2) By any standards, Aeroflot was a vast undertaking. Organised into 31 decentralised regional directorates, it owned over 8,000 aircraft ranging from crop-dusters to commercial jets. Comparison with other airlines is given in Table 3.2-1 below.

Table 3.2-1 Airline Performance, Passenger Business, 1991

Airline	Flights (thousands)	Passengers (millions)	Pass-Km (billions)	Load Factor	Average Trip Length (Km)
Aeroflot	758	128	209	85%	1633
Air France	179	13	33	67%	2538
American	853	76	131	62%	1724
BA	247	23	63	69%	2739
JAL	99	23	52	71%	2261
Lufthansa	374	24	42	61%	1750
Singapore	35	8	33	73%	4125
United	690	62	132	66%	2129

Source: ICAO

- (3) These figures in Table 3.2-2 are also revealing. Air freight in the Soviet Union was characterised by moving large volumes over comparatively short distances. This was partly the result of the extremely low cost of aviation fuel, and was made possible by the design of aircraft such as the Antonov 225.

<sup>17</sup> Where, for example, are the recommendations to conduct thorough market research before procuring passenger vehicles? For example, if people state a preference to travel by day between Tashkent and Andijan, why waste money on new sleeping coaches which are expensive to build and almost certainly economically and commercially unjustifiable to operate?

<sup>18</sup> Much of the Soviet airspace was under the control of the military, and there was therefore extremely close co-operation between Aeroflot and the defence sector.

**Table 3.2-2 Airline Performance, Freight Business, 1991**

Airline	Tonnes (thousands)	Tonne-Kms (millions)	Average Haul (Kms)
Aeroflot	2470	2351	1051
Air France	485	3230	6660
American	413	1290	3123
BA	384	2120	5521
JAL	717	3360	4686
Lufthansa	718	4106	5719
Singapore	314	1740	5541
United	463	1773	3829

Source: ICAO

- (4) The low cost of fuel also partly accounts for the large number of passengers flying around the Union. Ticket prices were low, related to the average weekly wage, and in consequence Aeroflot captured 37% of the intercity passenger market. It is important to note that international travel was restricted for most Soviet citizens, and only 7% of Aeroflot's passenger-kilometres were on international flights, almost all of which departed from Moscow.
- (5) Come the break-up of the Union in 1991, efforts were made to manage the deconstructing of Aeroflot in an orderly and equitable manner along the lines of the regional directorates. In practice, the new republics took control of what assets happened to be on the ground at the time. The result was the birth of some 200 "Babyflots".
- (6) In Uzbekistan, the Babyflot has evolved into 'Uzbekistan Khavo Yullari' (Uzbekistan Airways), a state joint-stock company which currently retains the vertically integrated structure of its former parent. It is responsible for around a dozen airports in the republic, and has a fleet of approximately 120 aircraft; these include, for use on international routes, two Airbus A310s, and two very recently acquired Boeing 767s. The rest of the fleet includes Ilyushin 62s (10), Ilyushin 86s (10) and Tupolev 154s (25) used mainly for internal and CIS routes owing to incompatibility with navigational and environmental standards elsewhere. There are also Antonov 24s, YAK 40s, Antonov 2s used for crop-dusting, and Mig 26 helicopters.
- (7) One should note the comparatively shorter ranges and heavier weights of the Soviet craft as shown in Table 3.2-3 below. This makes them less fuel efficient, which may have been of little consequence when fuel was available at an artificially low price, but which will become a significant problem in the future as and when the airline faces cost competition from other operators. This point is not, apparently, lost on the Director-General of Uzbekistan Airways who was recently reported (November 1996) to be negotiating with British Aerospace for the purchase of new aircraft to serve domestic routes.

**Table 3.2-3 Aircraft Performance**

Type	Passengers	Gross Weight (lbs)	Range (Nautical Miles)
Airbus A310	218/280	330695	5113
Boeing 767	216/290	300000	3639
IL86	234/250	458560	2235
TU154	128/167	198416	1565

Source: Official Airline Guide, Thomas Cook

- (8) The routes served by Uzbekistan Airways and other airlines operating to and from Tashkent include all the major domestic cities, most of the larger cities in the former Soviet Union, together with other international destinations including London, Manchester, Frankfurt, Amsterdam, Athens, Istanbul, Tel Aviv, Jeddah, Bahrain, Karachi, Delhi, Sharjah, Kuala Lumpur, Jakarta, Beijing, Seoul, and New York.
- (9) In common with all the other Babyflots, Uzbekistan Airways has witnessed a decline in both passenger and freight carryings since 1991, only partially offset by growth in the international passenger segment. This international growth is hardly surprising in view of the fact that in Union days most international flights emanated from Moscow; it was inevitable that this market would be distributed among the new republics. Comparative statistics are set out in the tables below.

Table 3.2-4 Air Freight Statistics, Central Asia, 1990-1996

Country	Unit	1990	1991	1992	1993	1994	1995	Projected 1996
Uzbekistan	Tonnes x 10 <sup>3</sup>	37	33	19	20	12	10.6	12.7
	Tonne-Kms x 10 <sup>6</sup>	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Kazakhstan	Tonnes x 10 <sup>3</sup>	70	50	30	30	N/A	N/A	N/A
	Tonne-Kms x 10 <sup>6</sup>	80	70	60	70	N/A	N/A	N/A
Kyrgyzstan (2)	Tonnes x 10 <sup>3</sup>	110	90	50	10	N/A	N/A	N/A
	Tonne-Kms x 10 <sup>6</sup>	370	360	220	460	N/A	N/A	N/A
Turkmenistan	Tonnes x 10 <sup>3</sup>	30	20	10	10	N/A	N/A	N/A
	Tonne-Kms x 10 <sup>6</sup>	30	20	20	40	N/A	N/A	N/A

Source: EBRD; Uzbekistan Ministry of Transport and Communications Available

N/A = Not

- Notes: (1) Please refer to Note (2) in Table 3.1-2.
- (2) The figures for Kyrgyzstan in 1993 also appear suspect. The study team believes that a figure of 46 million tonne-kilometres in that year is likely to be the correct one.

**Table 3.2-5 Air Passenger Statistics, Central Asia, 1990-1996**

Country	Unit	1990	1991	1992	1993	1994	1995	Projected 1996
Uzbekistan	Passengers x 10 <sup>6</sup>	(1) [7.5]	(1) [7.4]	(1) [3.5]	1.8	1.4	1.3	1.3
	Pass-Kms x 10 <sup>9</sup>	N/A	N/A	N/A	N/A	3.0	3.0	3.2
Kazakhstan	Passengers x 10 <sup>6</sup>	8.6	7.9	5.2	3.6	N/A	N/A	N/A
	Pass-Kms x 10 <sup>9</sup>	13.3	12.6	8.8	6.8	N/A	N/A	N/A
Kyrgyzstan	Passengers x 10 <sup>6</sup>	1.8	1.7	1.0	0.3	N/A	N/A	N/A
	Pass-Kms x 10 <sup>9</sup>	3.8	3.8	2.5	0.5	N/A	N/A	N/A
Turkmenistan	Passengers x 10 <sup>6</sup>	2.2	2.1	1.5	1.7	N/A	N/A	N/A
	Pass-Kms x 10 <sup>9</sup>	3.5	3.4	2.0	1.9	N/A	N/A	N/A

Source: EBRD; Uzbekistan Ministry of Transport and Communications Available

N/A = Not

Notes: (1) The Uzbekistan passenger figures for 1990-1992 are included for reference only. They refer to throughput at Tashkent Airport, but are indicative of the decline experienced. In 1991, Tashkent Airport handled over 100,000 aircraft movements; by 1994 this had decreased to just 37,000.

**Table 3.2-6 Uzbekistan Airways: Split Between International and Domestic Traffic**

Market	Unit	1994	Share (%)	1995	Share (%)	Forecast 1996	Q1 1996	Share (%)	
Passenger	Domestic	Pass x 10 <sup>3</sup>	1214.3	88.0	1155.2	86.4	1164.3	255.0	87.0
	International	Pass x 10 <sup>3</sup>	165.1	12.0	151.3	13.6	183.0	38.4	13.0
	Total	Pass x 10 <sup>3</sup>	1379.4	100.0	1336.5	100.0	1347.3	293.4	100.0
	Total	Pass-Kms x 10 <sup>6</sup>	2964	-	2967	-	3274	732	-
Freight	(1)								
	Domestic	T-Kms x 10 <sup>6</sup>	180.5	50.1	168.7	45.1	169.7	36.7	39.5
	International	T-Kms x 10 <sup>6</sup>	179.7	49.9	205.1	54.9	251.2	56.2	60.5
	Total	T-Kms x 10 <sup>6</sup>	360.2	100.0	373.8	100.0	420.9	92.9	100.0

Source: Ministry of Transport and Communications, Republic of Uzbekistan

Notes: (1) As previously, the unit here is uncertain.

(10) Load factors, which on average were around 85% in Aeroflot days, have been declining: from 62.5% in 1994, to 55.1% in 1995 and 48.3% at the beginning of 1996. There may be a number of explanations for this, but it would seem that the supply of air services may not be being adequately matched to the demand. A Government commentary on civil aviation during 1995 notes that: "There is a tendency to increase manpower whilst traffic volumes are decreasing." Reliability also appears below par, with only around 85%

of the scheduled flights operating.

- (11) Nevertheless, real revenues have been rising since 1994: by 2.8% in 1995 and by a projected 14.5% in 1996. These rates track closely the rate of change in freight tonne-kilometres; whilst it would be erroneous to imply any correlation between the two, there remains a suspicion that a rigid tariff structure is in place, and that the pricing mechanism is not yet market-responsive. There is a widespread view that airfreight tariffs are, indeed, excessively high, but even so Uzbekistan Airways derives some 30% of its revenues from freight.
- (12) Uzbekistan Airways' profitability figures for 1995 and 1996 have not been published. In common with most undertakings in the Republic, cash-flow is known to be a problem; the same Government commentary mentioned in Clause 3.2.10 above states that: "Lack of profit prevents Uzbekistan Airways from making prompt repayments to foreign companies for their A310 aircraft." More recently, one of the A310s was impounded at Heathrow Airport when payment for fuel was not made. That said, the problems appear to have eased sufficiently for the United States funding agency Eximbank to grant the \$190 million needed for the two new Boeing 767s and associated parts and equipment.
- (13) Apart from the purchase of new aircraft, investment has also been made in bringing Tashkent Airport closer to modern international standards. With German financial assistance, the runway has been upgraded and a new air traffic control system is being installed. Further improvements are intended to be made to the taxiways, apron and terminal building, but (on the insistence of the funding authorities KfW and EBRD) financing will be dependent on a separate and independent airport company being established. Although this condition had been accepted by resolution of the Cabinet of Ministers in 1995, the new company had still to be legally formed at the end of 1996.

It is the intention to make use of Japanese funding to effect similar improvements at the airports of Samarkand, Bukhara and Urgench; this will provide a significant catalyst to the growth of the tourist industry in these historic cities. Japan's OECF will provide ¥15.526 billion as loan capital (with a 10-year grace period on a 30-year maturity, and incurring interest at 2.7% per annum), and Uzbekistan Airways will provide ¥1.762 billion. The total investment is therefore approximately \$144 million.

### 3.3 ROAD TRANSPORT

#### 3.3.1 The road infrastructure

- (1) The emphasis on rail transport in the former Soviet Union entailed a reduced rôle for road transport. For example, in 1988, cars had a 20% share of passenger-kilometres compared to 80% in the United States; similarly, car ownership was low (58 cars per 1,000 population compared to 574 per 1,000 in the United States).
- (2) Average road density, given the vast tracts of uninhabited land, was low but this disguised considerable regional variations, ranging from 25.3km of public road per 1,000 square kilometres in Russia to 277.8 km in Ukraine. The figure for Uzbekistan is 96.8 km per 1,000 square kilometres.

- (3) Roads were characterised into four types: Public, Enterprise, Private and Urban.
- 1) Public roads were the main roads outside urban areas, and they were administered by regional public road administrations. They were further categorised into federal, republican, regional and local roads. Barely any of these could be defined as a motorway; the typical road would be of two lanes, with each lane being 6 to 7 metres wide.
  - 2) Enterprise roads belonged to organisations such as industrial concerns or collective farms, and were managed by the appropriate ministry. In Russia, the total length of these roads was around the same as public roads.
  - 3) Private roads were normally unpaved earth tracks for which the government held no responsibility. It is estimated that such roads accounted for no less than 40% of the total Russian road network.
  - 4) Urban roads were the responsibility of the urban authorities. Few cities had by-passes or ring-roads, and through traffic would have to negotiate the centre of towns.
- (4) Since independence, several republics have re-defined their road classifications. In Uzbekistan, the public road network is as shown in the table below. There are believed to be a further 28,000 kilometres of non-public roads.<sup>19</sup>

**Table 3.3.1-1 Uzbekistan Public Road Network**

Type	Length (Km)
International	3243
State	18582
Local	21493
<b>Total:</b>	<b>43318</b>

Source: Goscomprognostat

- (5) Construction standards were at best adequate for the type of traffic using the roads, but they tended to produce extremely rough surfaces. A recent major survey of Kazakhstan's roads of state and international significance revealed that 31% of the total kilometres suffered poor degrees of roughness, and 55% had unsatisfactory bearing capacity. In Turkmenistan, the main road from Chardjev to Turkmenbashi (a major component of the TRACECA scheme) had poor roughness for 62% of its length, and unsatisfactory bearing capacity for 54%.
- (6) This implies that many roads would need strengthening in order to support the axle-loads of modern 38- to 44-tonne lorries, despite the fact that the axle-load design standard on major highways has been raised from 6 tonnes to 10 tonnes. A survey undertaken in Russia,

<sup>19</sup> Source: Embassy of the Republic of Uzbekistan, Washington DC, Internet Site, May 1996. A World Bank report dated 1993, however, suggests that there are a further 90,000 kilometres of roads, whilst the UNDP Human Development Report of 1996 believes the figure to be 40,000 kilometres.

albeit in 1991, concluded that 35% of the road network needed strengthening<sup>20</sup>.

- (7) Bridges, at least on the main trunk roads, are not thought to be a problem as far as lorry weights are concerned since most of them will have been designed to accommodate heavy military equipment. On smaller roads, however, bridges are typically of a narrow, single-lane construction. Equally, urban street furniture such as tram and trolley-bus catenary is not considered to be a constraint to larger vehicles.
- (8) One aspect of the Uzbekistan road infrastructure which will need attention in order for any growth to be realised is the provision of fuelling stations, able to rely on regular supplies. At present, fuelling stations are few and far between, and shortages of petrol, diesel and gas are common.
- (9) In the early 1990s, a significant backlog of road maintenance (up to three years in places) had occurred in the Soviet Union, although there were wide regional variations. From personal observation in Uzbekistan, the condition of both trunk and local roads outside the cities appears generally quite good (in, for example, the Fergana Valley); within the cities, however, there is clearly a maintenance problem, with numerous instances of worn surfaces, rough surfaces, large potholes, protruding manholes, collapsed manholes, missing drain covers, and so on. Quite apart from being physically dangerous, this situation imposes a cost on the economy through damage to both vehicles and human beings.
- (10) On the face of it, available figures (reproduced in Table 3.3.1-2 below) suggest that the level of road maintenance outside the cities supports the observational evidence, with around 14% of the network being repaired each year. However, this would also tend to imply that roads need repairing about once every seven years, when ten to fifteen years would be a better aspiration given a) more modern surfacing techniques, b) generally modest traffic levels, and c) the fact that Uzbekistan's general climate is not overly deleterious to road-surface condition.
- (11) The financing of road repairs is aided by a hypothecated tax on enterprises equivalent to 1% of sales volume; this is in addition to a vehicle ownership tax based on vehicle capacity.

Table 3.3.1-2 Uzbekistan Public Road Repair Performance

Roads Repaired	1994	1995	Forecast 1996	Q1 1996
Kilometres	6076.7	6030	6100	(1) 575.8
% of Total	14.0	13.9	14.1	1.3

Source: Ministry of Transport and Communications, Republic of Uzbekistan

Notes: (1) Nothing should be read into the seemingly low level of repairs in the first three months of 1996. Road repairs are not effective in the winter months, and, indeed, compared to Q1 1995, the total is up by 12.1%.

<sup>20</sup> The survey also found that 65% of the safety barriers, 10% of the traffic signs, and 86% of the road markings were missing. But even this statistic hides the generally sparse provision of all of these items.



- (12) Road capacity is not generally regarded as a problem, with growth in traffic being absorbable for some time to come. The only difficulties are likely to occur in towns and cities where substantial through-traffic is generated - the current lack of by-passes or ring-roads being the cause. Urban traffic is well-provided for in terms of capacity, with grand, wide boulevards capable of handling substantial traffic-flows.
- (13) Little is known about future road development plans. Apart from the ambitions of the TRACECA project (see 3.1.8), there is apparently a plan to build a new trunk road from Tashkent to Angren and Fergana (which may or may not be dedicated to lorries) in five to six years time. It is also believed that the establishment of a tyre repair enterprise is being considered.

### 3.3.2 Road freight traffic

- (1) It has been estimated that in 1990 the lorry fleet of the former Soviet Union numbered 4.9 million vehicles, excluding military trucks<sup>21</sup>. The fleet conveyed some 527 billion tonne-kilometres (compared to 432 billion in 1980, and 221 billion in 1970); common carrier lorries each hauled 193 thousand tonne-kilometres per annum, over an average distance per load of 21 kilometres.
- (2) Originally, much of the fleet was petrol-, rather than diesel-, powered although a conversion programme meant that by the early 1990s about 15% of all public-use lorries were running on liquefied or condensed gas. Diesel was spurned mainly because of its poor performance in cold winter conditions. By 1996, some 26% of Uzbekistan's truck fleet had been converted to gas.
- (3) The size of lorries was small, with an average capacity of 6.4 tonnes; there was only a tiny proportion of semi-trailers with a payload exceeding 15 tonnes (2.6% of the Kazakhstan fleet, and 1.6% of the Turkmenistan fleet). Moreover, most of the fleet had open-top bodies. In Kazakhstan, for example, only 12% of rigid, and 8% of semi-trailers had covered van-type bodies; even then, average capacity of covered trucks was only 2.5 tonnes. Tankers too were comparatively small, with a typical average payload of 4.3 tonnes.
- (4) Lorry manufacture was a good example of the planned economy at work, with factories specialising in one particular size of vehicle. For example, UAZ made 2-tonne trucks, GAZ made 4.5-tonne trucks, ZIL made 5- and 6-tonne vehicles, and KAMAZ 8-tonners. There was little sharing of expertise or efficiencies between companies. Poor reliability and non-availability of spares was reported to be a common cause of complaint, with up to 40% of vehicles being off the road at any one time. Only KAMAZ established a nationwide service network.
- (5) Often, only one driver would be assigned to each truck thereby reducing the vehicle's

<sup>21</sup> Fully broken down, there were 706 thousand common carriers, 1392 thousand own-account agricultural trucks, and about 1400 thousand each of state-owned agricultural vehicles and non-agricultural own-account trucks.

productivity potential. On average a Soviet truck would travel 30-50,000 kilometres a year, compared to 60-80,000 in western countries.

- (6) Much is often made of alleged poor environmental standards in Soviet road transport, but in fact the available data paints a mixed picture as the following table shows:

**Table 3.3.2-1 Vehicle Emissions Data**

Vehicle	Country	CO Gm/Km	HC Gm/Km	NO Gm/Km	Particulates Gm/Km
Petrol Car	FSU	16.0	3.0	2.4	-
	WE	15.0	2.0	2.1	-
Diesel Lorry	FSU	5.1	2.7	11.4	1.5
	WE	4.7	11.4	9.5	1.1
Diesel Bus	FSU	7.8	3.4	10.0	1.9
	WE	2.5	10.0	11.0	0.7

Source: Strong and Meyer, Op. Cit.

FSU = Former Soviet Union  
 WE = Western Europe  
 CO = Carbon Monoxide  
 HC = Hydrocarbons  
 NO = Nitrous Oxide  
 Gm/Km = Grammes per Kilometre

- (7) Data on Uzbekistan's present lorry fleet is scarce. In April 1993, the state joint stock company Uzavtotrans was formed to control both the freight and passenger road fleets (except for public transport within Tashkent City). It took over some 400 enterprises, over 100,000 employees and a fleet of 50,000 vehicles. Many of these enterprises have subsequently been 'privatised' (see Chapter 2), with 49% of the shares going to the staff, 25% sold through auction, and 26% retained by the state. Increasingly, they have become free to set their own tariffs.
- (8) Oral evidence from the Ministry of Foreign Economic Activity advises that in 1994 240 30-tonne Mercedes lorries were purchased, with a further 500 assembled in a new plant at Khorezm. These were acquired for the purposes of international goods movement as existing domestic trucks do not fully meet international emissions standards. They are reported to travel as far afield as Romania, Bulgaria, Germany, Italy and Iran, exporting cotton and importing rice. Observation suggests that the Damas light vans assembled at the new Daewoo plant in Asaka are becoming popular, a market segment not properly provided for previously.
- (9) Statistics for Uzavtotrans' road freight are given in the table below. There has clearly been an ongoing process of state withdrawal from enterprises. What is not clear is what is happening to international freight traffic, which seems to be dwindling to nothing, unless it is in fact being handled by state-owned enterprises.

**Table 3.3.2-2 Uzavtotrans Freight Performance**

Indicator	Unit	1994	Share (%)	1995	Share (%)	Forecast 1996	Q1 1996
Tonnes Total	Tonnes x 10 <sup>6</sup>	228.4	100.0	219.8	100.0	211.0	50.0
State-owned	Tonnes x 10 <sup>6</sup>	140.7	61.6	87.1	26.0	46.0	12.5
'Non-State'-owned	Tonnes x 10 <sup>6</sup>	87.7	38.4	162.7	74.0	165.0	37.5
Tonne-Kms Total	T-Kms x 10 <sup>6</sup>	2717.4	100.0	2283.1	100.0	2089.0	489.5
State-owned	T-Kms x 10 <sup>6</sup>	1842.4	67.8	952.1	41.7	791.7	200.7
'Non-State'-owned	T-Kms x 10 <sup>6</sup>	875.0	32.2	1331.0	58.3	1297.3	288.8
(Of which International)	T-Kms x 10 <sup>6</sup>	5.6		0.8		N/A	N/A

Source: Uzbekistan Ministry of Transport and Communications

N/A = Not Available

- (10) These figures point to a decline in freight activity in keeping with general economic activity. For the future, as the economy recovers, it seems almost inevitable that road freight will begin to grow significantly again as patterns of distribution emerge that the railways are not well placed, either geographically or economically, to exploit.

### 3.3.3 Road passenger traffic

- (1) The Soviet Union, in 1990, had about 310,000 buses, of which half were used for public transit. Within each regional administration, there would typically be between 1,000 and 3,000 buses, owned by 30-50 enterprises. Many of these enterprises operated both bus and lorry fleets, although in large cities passenger transport was normally under the control of one dedicated authority. In common with other sectors, these enterprises also provided a range of social services for employees, such as health care, recreation facilities and housing.
- (2) As with lorry manufacture, buses were built according to plan in one of seven factories each specialising in a particular size of bus. There were also a number of buses imported, for example from Ikarus in Hungary.
- (3) Again, like the lorry fleet, many buses were petrol-driven and a gas conversion programme was undertaken. Problems with reliability and obtaining of spare parts typically meant that availability was of the order of 75-80%.
- (4) About one quarter of all bus travel was in rural areas, and 60% was urban. The remaining 15% was intercity travel, but even then the average trip length was only around 50km, rail generally being preferred for longer journeys. Buses accounted for about 60% of passenger journeys, but only 27% of passenger-kilometres.
- (5) In Uzbekistan after independence, public road transport was divided between two authorities: Uzavtotrans, and Tashgorpasstrans. The latter has responsibility for all public transport within Tashkent (except for UTJ's operations), whilst the former controls

provision in the rest of the republic; this includes urban, intra-urban, as well as some international routes. Details of Uzavtotrans' recent passenger performance are given in the table below:

**Table 3.3.3-1 Uzavtotrans Passenger Performance**

Indicator	Unit	1994	Share (%)	1995	Share (%)	Forecast 1996	Q1 1996
Passengers Total	Passengers x 10 <sup>6</sup>	1795.9	100.0	1619.6	100.0	1820.0	442.7
State-owned	Passengers x 10 <sup>6</sup>	N/A		243.8	13.4	205.7	51.4
'Non-State'-owned	Passengers x 10 <sup>6</sup>	N/A		1575.8	86.6	1614.3	391.3
Pass-Kms Total	Pass-Kms x 10 <sup>6</sup>	14573.0	100.0	12733.0	100.0	12500.0	3229.0
State-owned	Pass-Kms x 10 <sup>6</sup>	N/A		3845.3	30.2	3687.5	968.7
'Non-State'-owned	Pass-Kms x 10 <sup>6</sup>	N/A		8887.5	69.8	8812.5	2260.3
Service Reliability	(1) %	92.7		92.8		92.7	92.7

Source: Uzbekistan Ministry of Transport and Communications N/A = Not Available

Notes: (1) This is a measure of the proportion of timetabled services that actually ran.

It is interesting to note that passenger numbers have not suffered the same declines as in the rail sector, albeit that average trip lengths have been reducing.

- (6) No details of Uzavtotrans' future investment plans are known, but one might expect that fleet modernisation features among the priorities.
- (7) Within the capital Tashkent, Tashgorpasstrans' public transport provision is extensive, with buses, trolley-buses, trams and a modern two-line metro system all playing a role. In addition there is a network of 'maxi-taxis' (micro-buses running along set routes) together with a supply of about 6,300 official taxis. It is also common practice for travellers to hail passing motorists for paid lifts - as it were, fare-paying hitch-hikers. There is apparently a government policy aimed at ensuring that commuter journey times do not exceed 25 minutes.
- (8) The statistics suggest that there are 30km of metro lines, operated by 149 metro cars running in four-car sets. As elsewhere in the former Soviet Union, the metro system is a proud showpiece with spacious, ornate stations giving access to a frequent, reliable and rapid service. A third line is to be constructed linking the south and north of the city, though without apparently serving the airport near to which it will pass.
- (9) Some 424 trams operate along 288km of track. Observation indicates that the rolling equipment is life-expired, and that the track in parts is in dreadful condition; speeds tend to be comparatively slow. Tashkent City Council is particularly anxious to see a production and/or assembly facility for new trams, together with improved maintenance facilities for all modes. The bus and trolley-bus network extends to 632km, and is operated by around 16,000 buses and 450 trolley-buses. A small proportion of the bus fleet has recently been modernised by the acquisition of some new Mercedes buses, assembled in Samarkand. A

ministry report suggested that during 1996 some US\$ 23.2 million and Som 850 million would be required to procure buses for city and suburban routes.

- (10) Public transport is heavily subsidised, with estimates of the subsidy ranging from 60% to 90% of costs. Indeed, with a flat fare of just 6 Som for a journey within Tashkent, one is tempted to ask whether revenue even covers the cost of revenue collection and accounting - and if not, whether it would actually be cheaper to dispense with ticketing completely and allow people to travel for free.
- (11) Tashgorpasstrans' recent performance is shown in the following table. As with rail passenger transport, a large drop in the number of passengers was witnessed during 1995 (21%), which was matched by an equivalent decline (19%) in the total of passenger-kilometres. This would tend to indicate that the loss of custom took place across all the markets, but with a very slight skew in the 'short-hop' journey sector. Average journey length remains at around 4.3 kilometres. The generally low availability of road-based vehicles is probably a reflection of their age and difficulties in obtaining spare parts.

**Table 3.3.3-2 Tashgorpasstrans Passenger Performance**

Indicator	Unit	1994	1995	Forecast 1996	Q1 1996
Passengers Total	Passengers x 10 <sup>6</sup>	1010.7	794.1	793.0	195.2
Pass-Kms Total	Pass-Kms x 10 <sup>6</sup>	4342.7	3510.3	3510.3 (sic)	846.5
Service Reliability of:	(1)				
Buses	%	91.9	84.2	92.2	92.2
Trams	%	86.1	87.3	87.5	87.5
Trolley-Buses	%	87.7	89.8	90.0	90.0
Metro	%	100.0	100.0	100.0	100.0
Fleet Utilisation of:					
Buses	%	62.4	69.1	70.0	70.0
Trams	%	64.5	68.4	70.0	70.0
Trolley-buses	%	65.2	67.0	70.0	70.0
Metro Cars	%	76.8	75.9	76.0	76.0

Source: Uzbekistan Ministry of Transport and Communications

Notes: (1) This is a measure of the proportion of timetabled services that actually ran.

- (12) Very little is known about patterns of car ownership and use. Empirical evidence suggests that there is a large proportion of Ladas and Moskvitch's, gradually being supplemented by Daewoo's Nexia and Tico models. Other foreign makes would appear to be at the luxury end of the market - Volvos, BMWs, Mercedes, and Alfa Romeos have all been observed, although the extent to which there can be any reliable servicing network for such models is unknown.
- (13) The Daewoo plant aims to produce 29,000 cars in 1996, 100,000 in 1997, and 160,000 by 1999. The plant has a design capacity of 200,000 vehicles per annum. Of its production, around 50% will eventually be exported. Thus by the year 2000, approximately 216,000 new cars will have appeared on Uzbekistan's roads. It is not known to what extent these will either simply replace existing vehicles or alternatively contribute to growth in overall

car ownership. It is believed that there will be a corresponding reduction in the number of cars imported, so real supply may well remain constant. But if the estimate of around one million cars on the road at present is correct, then significant growth can be expected.

- (14) It is, of course, the case that cars are presently beyond the reach of most people's pockets; a new bank was opened adjacent to the Daewoo car-showroom at Asaka which initially offered credit for 70% of the vehicle purchase price, repayable over three years. There is, however, plenty of anecdotal evidence to support the view that there exists a large suppressed demand for car ownership - stories abound of waiting-lists at dealerships which can apparently be circumvented on payment of an appropriate sum of money to the dealer. Inevitably, there will be growth in this market; for the railways this is a double-edged sword - not only will it affect their passenger business, but the extra demand for fuel could give rise to shortages for the diesel fleet.
- (15) One area of road transport which appears to have escaped notice is that of motor-cycles and scooters. Curiously, few seem to exist and one might well expect this market to grow as well.

### 3.4 RAIL TRANSPORT

#### 3.4.1 The Soviet inheritance

- (1) Up until 1991, the Soviet Union's Ministry of Railways (MPS) controlled 32 railway administrations within the federation. The ministry applied common technical, management and financial standards and systems throughout the network, was responsible for train planning between the 32 railways, and allocated investment funds. Collectively, the system was known as SZD. As a whole, it was profitable with revenues exceeding costs by 37%<sup>22</sup>. Freight generated 21.3 billion roubles of revenue, against 3.7 billion roubles from the passenger business.
- (2) The operating statistics are truly awesome. With over 3 million employees<sup>23</sup>, Soviet railways in 1990 carried nearly 4,000 billion (sic) tonne-kilometres of freight (about half the entire world's rail freight), and conveyed 417 billion (sic) passenger-kilometres (about a quarter of the world's rail passenger traffic). A breakdown of these activities is shown in the tables below:

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<sup>22</sup> Although the Soviet system did not account for interest charges, it has been calculated that even with the charging of likely commercial interest to SZD's profit-and-loss account, it would still turn a profit.

<sup>23</sup> As noted elsewhere, a proportion of this workforce was involved in non-operational duties, providing social and recreational facilities.

**Table 3.4.1-1 SZD Freight Activity 1990**

Commodity	Tonnes (millions)	Share (%)	Tonne-Kms (billions)	Share (%)	Average Haul (Kms)
Coal and Coke	772	20.0	686	18.5	888
Oil Products	393	10.2	431	11.6	1096
Ores	318	8.2	243	6.5	763
Iron and Steel	193	5.0	294	7.9	1520
Forest Products	141	3.7	262	7.0	1860
Construction Materials	1025	26.6	510	13.7	498
Cement	108	2.8	71	1.9	654
Fertilisers	138	3.6	162	4.4	1176
Grains and Products	150	3.9	185	5.0	1235
Other	618	16.0	873	23.5	1413
<b>Total:</b>	<b>3856</b>	<b>100.0</b>	<b>3717</b>	<b>100.0</b>	<b>964</b>

Source: Strong and Meyer, Op. Cit.

**Table 3.4.1-2 SZD Passenger Activity 1990**

Service Group	Passengers (millions)	Pass-Kms (billions)	Average Trip (Kms)
Long-Distance	432	294	681
Suburban/Regional	3841	123	32
<b>Total:</b>	<b>4273</b>	<b>417</b>	<b>98</b>

Source: Strong and Meyer, Op. Cit.

- (3) Over 77% of freight tonne-kilometres were accounted for by trip-lengths in excess of 1,000 kilometres, and over 53% for hauls longer than 2,000 kilometres. By contrast, 69% of the tonnage was hauled for distances of less than 1,000 kilometres, and 40% for less than 300 kilometres.
- (4) The freight wagon fleet totalled just over 1.8 million vehicles, made up as follows:

**Table 3.4.1-3 SZD Freight Wagon Fleet, 1990**

Wagon Type	Numbers (000)	% of Total
Box Wagons	332.4	18.1
Container Flats	27.5	1.5
Platform Flats	232.4	12.7
Gondolas	581.6	31.9
Cement Hoppers	79.1	4.3
Grain Hoppers	61.7	3.4
Refrigerators	59.0	3.2
Tank Wagons	275.9	15.1
Specialised	31.7	1.7
Reserve Fleet	147.9	8.1
<b>Total:</b>	<b>1832.2</b>	<b>100.0</b>

Source: Study Team Calculations; Strong and Meyer, Op. Cit.

- (5) The fleet was mainly of standard two-bogie, four-axle design. Tare weights of wagons were between 28 and 32 tonnes, with capacities between 58 and 62 tonnes to give a gross weight of 90 tonnes and an axle-load of 22.5 tonnes. Average age of the wagon fleet was 16 years.
- (6) Intermodal operations were not well-developed. Although container traffic did exist, it was moved in mixed-traffic, rather than dedicated, trains. The containers themselves did not conform to ISO standards.
- (7) Trains of up to 57 wagons were common, although available locomotive and brake power tended to restrict gross trailing weights to between 3,000 and 4,000 tonnes. Average point-to-point speed was slow, seldom exceeding 40 kph, with trains being frequently re-marshalled as they moved from yard to yard. Although block-train working was occasionally toyed with, it tended to militate against squeezing the maximum use from the available capacity.
- (8) Financially, the freight business was profitable, with overall revenues exceeding overall allocated costs by 44%. However, it is likely that disaggregation of financial results would have unearthed variations and cross-subsidies between markets and geographical areas.
- (9) The passenger service was broadly broken down into three categories: long-distance, regional and suburban.
- (10) Long-distance trains tended to follow a pattern of late evening departure and early morning arrival on the following or subsequent days. They averaged 55-60 kph, and would normally consist of up to 20 coaches. They were also comparatively labour-intensive; apart from the two-man locomotive crew, there would be a chief conductor supervising a team of up to two attendants per coach. There could therefore be as many as 43 members of staff on one train. Four types of accommodation were normally on offer: seats, sleepers without compartments, 4-berth compartment sleepers, and 'luxury' 2-berth compartment sleepers.
- (11) Regional trains served branch lines, as well as those stations on main lines which were not served by the long-distance trains. These services were operated by both multiple-unit and loco-hauled equipment.
- (12) Suburban services were a feature of every large city in the Soviet Union; the word 'suburban' is something of a misnomer as the services often ran quite a distance into the countryside. As elsewhere, there were significant morning and evening peaks; unlike elsewhere, traffic tended to increase during the summer as city-dwelling commuters moved out to their country dachas. Again, both multiple-unit and loco-hauled operation took place.
- (13) Details of SZD's passenger rolling stock are shown in the following table:



**Table 3.4.1-4 SZD Passenger Coach Fleet, 1990**

Coach Type	Numbers In Operation	Numbers In Maintenance	Total
LH Passenger	34850	15300	50150
LH Dining	6540	2020	8560
LH Suburban	2830	N/K	2830
LH Other	1300	N/K	1300
EMU	18760	970	19730
DMU	3240	270	3510
<b>Total:</b>	<b>67520</b>	<b>18560</b>	<b>86080</b>

Source: Strong and Meyer, Op. Cit.

LH = Loco-Hauled  
 EMU = Electric Multiple Unit  
 DMU = Diesel Multiple Unit  
 N/K = Not Known

- (14) Passenger coaches had a book life (for depreciation purposes) of 28 years, or 25 years for restaurant-cars. The average age of the loco-hauled fleet in 1991 was 18.5 years, and of the MU fleet 15 to 18 years. The technology is therefore ageing; long-distance coaches, for example, have wheel-driven generator equipment, and even coal-fired boiler heating. Facilities for passengers were and are, at best, basic - even in the 'luxury' two-berth sleeper compartments.
- (15) Overall, passenger services were profitable, with revenue exceeding costs by an estimated 7-9%. This does conceal cross-subsidies, however. The revenue from suburban services only covered 55% of costs.
- (16) SZD's locomotive fleet was the largest in the world, comprising in 1990 36,600 locos and around 62,000 sections. (A 'locomotive' is normally a unit of one, two or even three sections coupled together semi-permanently; most loco-hauled trains were operated with one such unit.) Excluding shunting locos, and locos undergoing repair, the active mainline fleet was 21,260 locomotives<sup>24</sup>, categorised as follows:

**Table 3.4.1-5 SZD Mainline Locomotive Fleet, 1990**

Freight Electric	Freight Diesel	Freight Locos Per Billion Tonne-Kms	Passenger Electric	Passenger Diesel	Passenger Locos Per Billion Pass-Kms
9405	7115	4.45	2545	2195	(1) 16.12/11.37

Source: Study Team Calculations; Strong and Meyer, Op. Cit.

Notes (1) The figure of 16.12 relates to all passenger journeys, including MU-worked. The second figure of 11.37 relates only to (loco-hauled) long distance traffic.

<sup>24</sup> If this fleet had been allocated to Republics pro-rata to route kilometres, Uzbekistan would have received 491 locomotives. If it had been allocated pro rata on the basis of 1991's high level of freight and passenger kilometres, Uzbekistan would have received between 387 and 414 locomotives.