

PART II FORMULATION OF INTEGRATED LOGISTICS SYSTEM DEVELOPMENT

CHAPTER 6 DEVELOPMENT CONCEPT AND STRATEGIES FOR THE LOGISTICS SYSTEM IN KAZAKHSTAN

6.1 Present and Future Problems and Issues (Summary)

(1) Weaknesses of the Trans-Kazakhstan Route

As described in Chapter 4.2, the Trans-Kazakhstan has many strong points, such as:

- 1) Shortest travel distance between Asia and Europe,
- 2) Offers a seamless railway route from the East Asian coastline to major European industrial areas with a minimum number of transshipment points (Dostyk and Brest), and
- 3) Offers competitive conditions on transit time and/or transport cost for cargo originating from China Coastal and Inland Areas.

On the other hand, it has the following weak points.

- 1) Lack of awareness in the market as an alternative trunk line for connecting Asia and Europe, while well-known as a trunk line for the Central Asia region. Due to limited experience of actual transport on this route, some cargo-owners/forwarders are hesitant to choose this route.
- 2) Due to combined transportation modes, difficulty in guaranteeing the reliability of through transport service (punctuality, safety, and cargo information) by one transporter to cargo-owners.

The strong points of the Trans-Kazakhstan route must be developed and its weak points overcome.

(2) Issues of Marketing to Seek Customers

As described in Chapter 4.1, it is essential to increase container cargo volume accounted for by containers, which contributes to more profits in railway transportation in Kazakhstan. However, in the current situation, where the main export cargos are mineral resources and their processed goods, which are shipped by tank or bulk container in Kazakhstan, it may be difficult to increase container cargo volume for exports in the short term. Current major cargos shipped by container are manufactured products such as electrical appliances and machine tools, consumer goods and vehicles for import. Under such circumstances, adoption of the following countermeasures should be considered, in order to make more profits through rail transportation: a) higher imports of container cargo in the short term (higher exports of container cargo in the long run through industrial diversification in Kazakhstan) and b) more container transit cargo passing through Kazakhstan (targeting the west-east corridor in particular). To achieve this, more efficient logistics systems and marketing functions must be developed.

(3) Kazakhstan Distribution System Issues

Logistic systems in Kazakhstan are still at the initial stage, far behind in comparison with developed countries.

In the distribution system, trying to streamline only in terms of railway distances will have only a limited impact. Efficiency of modal changing points, from cargo owner to railway station and from railway station to consignees, must be improved.

(4) Cargo Transportation Demand Increment Issues

1) International Trade and Activation of Distribution System

Kazakhstan has made the shift to a market economy policy, activating international trade activities and transactions in response to the economic development of Kazakhstan that has been planning to change from resource dependency to a multi-industry policy, and should establish distribution systems not only domestically but internationally as well.

2) Increase in freight demand

Transport cargo volume in Kazakhstan shows a high annual growth rate supported by high economic growth. Such an increase in cargos requires investment in construction and operation of efficient facilities for domestic cargo transportation.

3) Increase in international and transit trade

International and transit cargos are increasing dramatically in proportion to the high economic growth of Kazakhstan and increase of merchandise trade with Japan, China, Korea, the Central Asian countries and Russia. According to the enterprise survey in Lianyungang Port and Urumqi, demand is quite active. In addition, there is potential for international and transit cargos to increase markedly from now on.

(5) Transport Infrastructure Issues

1) Railway network

Due to the area's historical background, the railway networks in Kazakhstan were built in the direction of Russia, so the TRACECA (east-west) network nationwide is weak.

2) Aktau Port

The volumes of both crude oil and dry cargos at Aktau Port have reached the limit of the port's capacity, so freight congestion is becoming a concern.

Therefore, the efficiency of physical handling facilities must be improved, customs and other procedures speeded up, and costs reduced by encouraging competition among marine transport and port terminals.

3) Dostyk Terminal

Since container cargos from China are increasing greatly, there are problems such as lack of transshipment facilities and bogies or carts for containers. In addition, transshipment facilities for not only containers but also other general cargos are reaching the limits of handling capacity.

In addition to the physical cargo congestion problems, there is the problem of customs and other time-consuming processing due to deficiencies in voluminous documents on the Chinese side (or on the Kazakhstan side, according to the Chinese side).

(6) Railway operation system

The present freight transport system of the KTZ is still based on the method of assembling and dismantling freight cars at each freight yard. This is cost-effective for the supply side, but it is far from speedy transport and punctuality for the demand side.

Sales of container transport services should be reinforced and conditions enabling KTZ to operate block trains should be established.

Concerning KTZ's information system, although freight information is partially processed by computer, on-rail information transmission is generally done by telephone and other old methods involving manual work, which is not precise and speedy information transmission.

(7) Customs issues

Customs issues are as follows.

- Declaration of goods with numerous paper documents
- Lack of comprehensive risk management
- Lack of computer-based network with proper supervision and other related organizations
- Lack of IT systems
- Lack of training and retraining
- Obsolete equipment and machinery
- Need for joint control with neighboring countries and one-stop-border points

However, reforms and improvement of customs from the old Soviet Russia style to the world standard are progressing, and it is expected that these issues will be resolved in the medium and long term.

Necessary measures are already undertaken for some of the issues, i.e., simplified customs procedures, information system development and joint control with neighboring countries.

(8) Organizations in relation to logistics

The Kazakhstan government has a strong vertical structure, so horizontal relationships, that is, coordination among related ministries and agencies, seem weak, and complex continuous transport logistics cannot be assured.

Since logistics centers are planned by various ministries, committees and divisions independently, there appears to be insufficient coordination or collaboration among them.

(9) Regional and Industrial Development Issues

Kazakhstan is now a resource-dependent economy, with mineral ores accounting for 75% of railway cargo transportation, which causes one-way cargo transportation, and in consequence, has lowered the efficiency of transportation.

In areas surrounding the Caspian Sea, industrial development is being introduced now, and this trend might induce an increase in distribution, although industrial development is a pending issue.

Kazakhstan is planning to become a member of the WTO. If it is successful, there is concern that the weak domestic distribution industry would be seriously affected. Countermeasures against such concern should be considered.

(10) WTO Entry Issues

Kazakhstan is preparing to join the WTO. Entry to the WTO is beneficial to Kazakhstan. However, there are some issues because some industries or companies in Kazakhstan are not competitive enough with foreign competitors and these industries or companies may lose and disappear if Kazakhstan joins the WTO. Logistics industry is one of such industries in Kazakhstan. Foreign logistics companies have a lot of experiences, technologies, capitals and global network in the market. If they enter the logistics market in Kazakhstan, weak local logistics companies in Kazakhstan may not be able to compete with them. Therefore, it is necessary to promote and reinforce such local companies before the entry to the WTO. One way is to establish partnerships or joint venture with foreign logistics companies.

6.2 National Development Plan

6.2.1 KAZAKHSTAN 2030 (Long-Term National Development Plan published in October 1997)

In 1998, the Government of Kazakhstan approved “Kazakhstan 2030,” the national development strategy up to 2030.

It declared seven long-term priorities to be achieved: i. National Security, ii. Domestic Political Stability and Consolidation of Society, iii. Economic Growth Based on an Open Market Economy with a High Level of Foreign Investment and Internal Savings, iv. Health, Education and Well-being of Kazakhstan Citizens, v. Power Resources, vi. Infrastructure, in particular Transport and Communications, and vii. Professional State.

The third priority, “economic growth based on an open market economy with a high level of foreign investment and internal savings”, emphasizes privatizing enterprises, attracting foreign investment, converting from a raw material-oriented economy to diversified industries such as light industry, food, infrastructure, oil-and-gas processing, chemical and petrochemical, machinery building and service industries.

The sixth priority, “Infrastructure, in particular transport and communications,” relates to logistics.

It points out the importance of transportation flows between the west and east and international competitiveness of trade and transportation. The strategy describes each sub-sector of transport.

Among the descriptions, the following priorities are noteworthy in railway policy.

- Dostyk station, Dostyk-Aktogai route
- Construction of multi-modular terminals in heavy loading areas
- Restructuring of all transportation-communications monopolies separating them from non-specialized enterprises

Concerning road transport, the following priorities can be noted.

- Development of automobile roads in directions providing international transportation along with the creation of high-speed and privatization and concession
- Construction of private main highways through privatization and concession
- Traffic capacity improvement of main highways and bridge construction

In water transport, reconstruction of Aktau Port is mentioned.

6.2.2 Transport Strategy of the Republic of Kazakhstan up to 2015

In 2006, the Transport Strategy of the Republic of Kazakhstan up to 2015 was approved.

This strategy analyzes the current conditions of the transport and communications sector first.

The Strategy clarifies that its purpose is to develop an advanced transport-communications complex capable of fully satisfying the needs of the economy and the population in transportation services.

The mission of the Strategy is to establish a maximum improved transportation system, serving to achieve the objectives of the government, use the transit potential of the country, and minimize transportation costs.

The key orientations of the strategy are as follows.

- Improvement of the state regulation system relating to transportation;
- Formation and development of the transportation infrastructure;
- Development of the transportation service market;
- Regional development of the transportation system;
- Transport safety improvement;
- Increase of effectiveness in transit potential usage;
- Innovative development of the transport sector; and
- Enhancement of human resource potential in the transportation field

Each sub-sector strategy is clarified but later divided into two stages for implementation.

The basic principles of financing are as follows.

- Since almost all transport services will be provided by private enterprises, they will independently cover their operational and capital expenses.

- The basic (trunk-line) network of automobile roads, railways and the internal navigation infrastructure will remain state property. Terminals will be gradually transferred to the property of the private sector.
- Construction and technical maintenance of terminals at the sea ports will be mainly within the responsibility of the private sector. The sea infrastructure for general use will be within the responsibility of the state, and expenses will be reimbursed as much as possible, thanks to port fees and based on contracts with ship-owners and stevedore companies.
- Ports in internal navigational waterway will be within the sphere of private sector responsibility. Nature-protection measures in the internal navigational waterway system will be covered by budget funds provided for such measures within the waterway and sluice maintenance program. As a result, state investment will be necessary for technical maintenance and capital expenses.
- The infrastructure of the road sector is different from other infrastructure, because dues and fees for its use are not charged directly on the spot or during use.
- Participation of the private sector in different areas of the transport sector will be encouraged, including long-term concession agreements when the infrastructure will eventually be returned to the state.
- Along with state financing of the transport infrastructure, it is planned to attract development institutions and other local and international financial organizations (EBRD, ADB, World Bank, IDB, etc.).
- Approximate investment need for the transport complex for the period of the Strategy implementation will be around 3.4 trillion Tenge in 2005 prices, out of which 70% will be private investment. The basis for the approximate assessment of the investment is the need for restoring, rehabilitating and building various elements of the transport infrastructure and updating rolling stock.

6.2.3 Innovative Industrial Development Strategy of the Republic of Kazakhstan for 2003-2015

This industrial development strategy was approved in 2003. Logistics closely relates to industrial development, because industrial development generates freight, and logistics conditions also affect industrial location. In addition, this strategy includes transport development as infrastructure.

This Strategy formulates the state economic policy for Kazakhstan for the period up to 2015 and aims to support sustainable development of the country through non-extraction-oriented diversification of the economy.

Production of competitive and export-oriented goods and services in processing industries and services is the major focus of state innovation industrial development policy.

Priorities for industrial and innovation policy are all potentially competitive and export-oriented non-extraction industries, as follows.

- 1) Raw material processing (primary petrochemical products – ethane, propane, butane, hexane,

ethylene, propylene, acetylene, benzol, xylol, etc. and manufacturing plastics and elastomers from these products)

- 2) Metallurgy (value-added chain development with over 100 elements from the periodic table contained in mineral ores, sanitary engineering, ironmongery, furniture accessories, dyes, paints, etc.)
- 3) Grain processing (multi-sectoral value-added chain through deepening technological grain processing)
- 4) Science Intensive and High-Tech Production (biotechnology, nuclear technologies, space technologies, creation of new materials and chemical products, information technologies, etc.)

It is necessary to establish new and strengthen the existing state development institutions, namely the Kazakhstan Investment Fund, the Kazakhstan Development Bank, the Kazakhstan Innovation Fund, and the Export Insurance Corporation, according to the following principles:

- Decentralization
- Specialization
- Competition
- Transparency

The basic directions for trade policy are as follows.

- Trade liberalization
- WTO accession

The state investment policy will combine comprehensive encouragement of private investment with public investment programs aiming to develop non-extraction industries.

Measures to increase productivity for competitiveness

- 1) Labor (supply of highly qualified professionals, education and professional training, health care development)
- 2) Capital (financial market development, fiscal policy)
- 3) Technologies (development of science, research and innovation policy, standardization and certification policy)
- 4) Infrastructure (electric power policy, information policy, telecommunications development, transport development)
- 5) State regulation (tariff policy and competition protection, environmental policy)

The Strategy will be implemented in three stages, as follows.

- The first Stage (2004-2005) will be the preparation stage requiring appropriate amendment of existing legislation to draft new laws, to establish state institutions ensuring state involvement in investment and innovation projects, train specialists in the value-added chain analysis, and identify efficient projects to be implemented with state involvement.

- The second stage (2006-2010) will be a period of active implementation of the Strategy's activities in all the sectors allowing for comprehensive capacity building based on scientific and technological achievements and consistent with international standards, as well as for training of the required specialists.
- The third stage (2011-2015) will be the most productive for implementation of the Innovative Industrial Development Strategy with operation of commenced capacities and development of value-added chains in new spheres and markets.

Infrastructure including transport development mentioned above should be noted.

The main objective for the transport sector is to expand and improve cargo and passenger flows in line with rapid economic development of the country, to avoid the transport infrastructure becoming a constraint on development. Another important objective is to undertake maximum development of the country's transport potential.

The modern concept of development of the international transport corridor network transiting through Kazakhstan is based on three priority directions:

- Russia, Europe and Baltic countries;
- China, Japan, Southeast Asia;
- Central Asia, Trans-Caucasus, Iran, Turkey.

6.3 Vision, Goals and Strategies

6.3.1 Vision and Goals

Based on the present situation and issues and the National Development Plans of Kazakhstan described above, the basic direction of the marketing plan for improvement of the integrated logistics system in Kazakhstan can be concluded as follows.

Vision
<p>Kazakhstan has emerged from its economic transition period and is aiming to match new industrial countries and become one of the 50 countries top-ranked for competitiveness.</p> <p>By establishing an efficient and effective logistics system, Kazakhstan seeks not only economic development but also improving residents' quality of life, and aims to achieve national stability and sustainable development through balanced regional development and to promote the position of Kazakhstan in the world.</p>

This marketing plan study is being conducted setting the goals above as follows.

National Goals
<p>National Goals: Integrated logistics system development plan</p> <p>Goal 1: Establishment of east-west transit hub</p> <p>Goal 2: Modernization of logistics system in Kazakhstan</p>

6.3.2 Development Strategy for Logistics System

To achieve the above vision and goals, eight (8) development strategies have been established as shown below:

Table 6.3-1 Strategies for Logistics System Development in Kazakhstan

Strategies for Logistics System Development
Strategy 1: Strengthening the Trans-Kazakhstan Route
Strategy 2: Promoting containerization for freight traffic
Strategy 3: Strengthening of marketing functions in the logistics service industry
Strategy 4: Developing infrastructure related to logistics system
Strategy 5: Developing information system and standardizing logistics system
Strategy 6: Standardizing and simplifying the customs system
Strategy 7: Enhancing regional and industrial development
Strategy 8: Institutional and human resource development

These strategies came from resolving present and future problems and issues mentioned in 6.1.

Table6.3-2 Strategies to solve Present and Future Problems and Issues

Issues \ Strategy		1	2	3	4	5	6	7	8
		Strengthening of Trans-Kazak Route	Promotion of Containerization for Freight Traffic	Strengthening of Marketing Functions in Logistics Service Industry	Development of infrastructure related Logistics System	Development of Information System and Standardization of Logistics System	Standardization of Customs System	Enhancement of Economic and Industrial development	Institutional and Human Resource Development
1	Competitiveness of Trans-Kazak Route								
	* To overcome weak points								
2	Marketing to seek More Customers								
	* To cultivate import/export container cargoes								
	* To cultivate more transit container cargoes								
3	Increase of container traffic demands								
	* Activation of international trade								
	* Increase in container cargoes								
	* Increase in international container demand								
4	Transport infrastructure issues								
	* Railway network								
	* Aktau Port								
	* Dostyk terminal								
5	Railway operation system								
	* Overaged and shortage of containers and container cars								
	* Change in railway operation system								
	* To increase in block train								
6	Container cargo information system								
	* Modernized container cargo information system								
7	Customs system								
	* Lacking of standardization of customs system								
	* Complex of customs procedure								
8	Organization and Institutional Issues								
	* Shortage of human resource with regard to logistics system								
	* Lack of institution with regard to logistics system								
9	Regional and economic development								
	* Lacking of regional development								
	* Delay of industrial development								

Notes: Strategies to meet the present and future issues

Table 6.3-3 shows the relationship between target, strategy, objective and measures.

Table 6.3.3 Integrated Logistics System Development – Goal, Strategy Target and Measures

Vision	Goal	Strategy	Target	Measures
Converting from "raw material oriented economy" to "diversified economy"	Integrated logistics system development 1) East-West Transit Hub 2) Modern and efficient logistics system	Strategy 1: Strengthening of Trans-Kazak Route	To strengthen Trans-Kazak Route of East-West Transit route in order to enhance function of transit hub	<ul style="list-style-type: none"> • Railway network development • Improvement of freight logistics terminals • Expansion of Aqtou Port
		Strategy 2: Containerization of Cargo Traffic Development	To construct competing logistics system with efficient freight traffic by containerization of freight traffic	<ul style="list-style-type: none"> • Improvement of freight transport operation system • Promotion of containerization
		Strategy 3: Strengthening of Marketing Functions in Logistics Service Industry	To strengthen marketing function in order to promote marketing of the container traffic	<ul style="list-style-type: none"> • KYZ marketing function development • Forwarder development • Promotion of customer services
		Strategy 4: Development of Logistics Infrastructure	To provide basic infrastructures for development of modern logistics system by integrated transport network and improvement of freight transport system in order to solve the bottleneck, and to meet future freight traffic demand	<ul style="list-style-type: none"> • Railway network development • Improvement / construction of logistics terminals • Development of port • Road network improvement
		Strategy 5: Development of Information System and Standardization of Logistics System	To improve reliability and quality of logistics services by tracing system of container cargoes and appropriate management for cargo movements.	<ul style="list-style-type: none"> • Container cargo information system • Transit cargo information system
		Strategy 6: Standardization of Customs System	To provide smooth customs operation system by standardization and simplification of customs procedure	<ul style="list-style-type: none"> • Customs system improvement • Simplification of customs system
		Strategy 7: Enhancement of Regional and Industrial Development	To promote economic and industrial development in order to utilize Trans-Kazak Route	<ul style="list-style-type: none"> • SEZ development • Regional development
		Strategy 8: Institutional Development and Human Resource Development	To provide micro environment to access logistics market and to enhance human resource development for logistics service industry	<ul style="list-style-type: none"> • Human resource development • Institutional development

6.4 Policy for Container Logistics System Development

The policy for improving the distribution system in response to the strategy described above is summarized on Table 6.4-1. The policy listed suggests solutions for settling predicted present and future issues in the fields of railways, track transport, distribution services, marine transport and ports, and institutional and human resources. In the field of railways, it suggests not only railway network improvement such as hardware, but also “soft” features such as relocating and establishing multi-function cargo stations, changing the cargo railway transportation system and operation system, and increasing container transport. Moreover, it also suggests the development of a distribution information system, which is important in the modern distribution business field. Further, it suggests the promotion of truck-related industries and institutional and human resources development.

Table 6.4-1 Strategy for Distribution System Development and the Development Policy

Strategy \ Measure		1	2	3	4	5	6	7	8
		Strengthening of Trans-Kazak Route	Promotion of Containerization for Freight Traffic	Strengthening of Marketing Functions in Logistics Service Industry	Development of infrastructure related Logistics System	Development of Information System and Standardization of Logistics System	Standardization of Customs System	Enhancement of Economic and Industrial development	Institutional and Human Resource Development
Railway Transport Development									
R-1	Railway Network Development								
R-2	Improvement of Railway Container Terminal								
R-3	Improvement in Freight Transportation System								
R-4	Improvement in Freight Transport Operation System								
R-5	Promotion of Containerization								
R-6	Railway Cargo Information System Improvement								
R-7	KTZ Marketing Function Development								
Road Transport Development									
T-1	Road Network Development								
T-2	Enhancement of Truck Industry								
Port and Marine Transport Development									
M-1	Port Development								
M-2	Caspian Maritime Transport Development								
Logistics Service Industry Development									
L-1	Multi-Modal Logistics Terminal								
L-2	Forwarder Development Program								
Customs System Improvement									
C-1	Customs System Improvement								
C-2	Simplification of Customs System								
Regional and Industrial Development									
I-1	Special Economic Zone Development								
I-2	Regional Development								
Institutional and Human Resource Development									
J-1	Human Resource Capacity Development								
J-2	Institutional Development								

CHAPTER 7 CONTAINER LOGISTICS SYSTEM DEVELOPMENT PLAN

7.1 Railway Development Plan

7.1.1 General

In freight distribution of Kazakhstan in 2004, the volume of railway transport is 216 million tons or 163.4 billion ton/km. It holds a 13% share of the total tonnage and a 79% share of the total tonnage/kilometer. Average transport length of railway cargo is 785 km/t and that of truck cargo is 31 km/t. This shows that railway plays an important role in long haul transport while trucks play an important role in relatively short distance transport. In view of this role-sharing structure between railways and trucks, the roles and tasks of railway freight transport are identified below and corresponding measures are identified to improve the logistics system in Kazakhstan.

7.1.2 Overview of Future Railway Development in Kazakhstan

In order to formulate the Railway Development Plan, it is necessary to review the existing future plan and policy. For this purpose, the “Transport Strategy till 2015” (hereinafter referred to as “the strategy”) will be reviewed. In the strategy, several focal points are discussed regarding the railway sub-sector development. The summary is shown in Table 7.1-1.

Table 7.1-1 Main Features of “Transport Strategy till 2015”

Item	Policy perspective	Related issues of this study
Railway infrastructure development	<ul style="list-style-type: none"> • Upgrading of existing network • Priority of network development is given to North-South and East-West directions. • New line provision aims at each sector between Beineu-Shalkar, Khorgos-Saryozek, Zhezkazgan - Saksaulskaya and Mangyshlak-Bautino and Yeraliyevo-Kuryk. • Electrification for the section with heavy cargo load, i.e., Makat-Kandagach, Almaty-Aktogai and others 	The section for new line provision should be taken into consideration for freight route development, especially container train routes.
Development of transport services	<ul style="list-style-type: none"> • In principle, railway transport services are supplied under competitive market conditions. • Services for trunk line networks remain under state control with clarification by establishing certain norms for use. • For the enhancement of technological and economic efficiency in cargo transportation, necessary competition is introduced amongst the carriers and operators. • Encouraging infrastructure development for exclusive access lines by enterprises-consignors. 	Priority is given to promoting competition among freight operators and carriers. Basic rules should be examined for using the trunk line network.
Transit potential	<ul style="list-style-type: none"> • In order to make possible railway corridor potential for international transit, services with accuracy, reliability and speed of transportation must be taken into consideration. • Special emphasis is given to the development of Dostyk station for reinforcing inter-connection with China. • For expansion of advantage by logistics system provision, several logistics centres are established at Astana, Almaty, Aktau and Dostyk stations and in other industrially developed regions. • To increase cross border traffic on the Chinese border, the necessary actions for capacity expansion should be taken. • To further increase transit cargo from China, a second international border railway crossing point is developed at the section of Khorgos – Saryozek. 	<p>Requirement of development condition of international freight corridors</p> <p>Logistics facilities provision for Dostyk</p> <p>Logistics centre concepts are considered for development plan formulation.</p> <p>Specific attention is given to development plan of Dostyk station.</p>
Others	<ul style="list-style-type: none"> • For the innovation development and formation of HR potential, development conditions should be arranged for the production and repair of the carriages and locomotives, an integrated system of transport process information provision developed, and multimodal and inter-modal logistics complexes created. 	The plan formation of related facilities is taken into specific consideration.

7.1.3 Major Issues for Railway Freight System Development

(1) Change of Freight Transport Structure

Kazakhstan is a large country (2.71 million km²) with a relatively small population (15 million). It has abundant natural resources like coal, mineral ores, crude oil, etc. and primary products account for major share of its total logistics distribution there. Providing an appropriate service for these needs, the volume of railway transport has been increasing steadily through the era of socialist economy and economic transition period. It is expected that more efforts will be made for further development. At present, the economy in Kazakhstan is vigorous in developing a market economy and oil resources. Under this situation, development of roads and expansion of truck transport will intensify competition between railway and truck transport and can cause a qualitative change in the transport structure.

Concerning existing export items, bulky cargos like coal, mineral ores, crude oil and so on accounting for a major share contribute to the KTZ economy. However, under recent economic development, transport of general cargos or industrial products is increasing. Transport characteristics such as quick delivery or clear delivery schedule become important service factors for this kind of transport.

(2) Importance of International Transport

Kazakhstan is located in the center of Central Asia, 3,000 km wide and 1,600 km long. It faces China on the eastern border, the Caucasus countries over the Caspian Sea in the west, Uzbekistan/Kyrgyz/Turkmenistan in the south and Russia in the north. In ancient times, it played a central role as a trading center in the east-west trade. With the independence of the Central Asian countries and development of transportation routes toward China, the freight volumes between those countries are increasing rapidly and the importance of the country's role as a trading hub is growing.

In order to play a leading role as a trading hub, Kazakhstan must provide its customers with user-friendly, speedy railway transport services at a reasonable price by improving its transport routes.

(3) Existing Transport Network and Vehicles Mismatching with Future Freight Needs

At present, KTZ's transport network is about 14,200 km long (4,787 km in double-track sections, 4,136 km in electrified sections), which is lower-density for this area of land, with about 360 stations handling cargo, 40 wagon yards (six of them are primary freight yards), 1,700 vehicles and about 80,000 wagons.

The current railway system of Kazakhstan, which had been a Russian-centered railway system because of its historical background, has improved considerably to meet more of its domestic demands. However, as the traffic center of Central Asia, further improvement of the transport system should be carried out. There are many projects such as east-west railway link development, and upgrading existing routes by double-tracking or electrification. Over the short and medium terms, double-tracking and electrification of the existing routes are supposed to be a realistic choice.

Also, it is necessary to replace aged wagons to boost container wagon fleets to meet new demands, and

develop and strengthen functions of cargo terminals.

Needless to say, a modern logistics system requires integration between transport information and sales information. In KTZ, computers have already been introduced in communication of transport information from the transport center to each field and in logging of handling work information in major stations or wagon yards. These operations are carried out efficiently with computers. However, the primary information in transport operation is communicated mainly through conventional phone systems. Developing a nationwide transport and operation information system is crucial for railway transport in order to play a major role in domestic and international logistics.

(4) Freight Transport System Inadequate for Market Economy Development

After the breakup of the Soviet Union in 1991, a number of reforms were carried out within KTZ; the marketing department and the transport department were divided into each one's specialized area to play their respective roles. However, in dealing with railway customers, they seem to be relics of the railway's monopoly era. In other words, the management principle still emphasizes transport efficiency rather than the service requirement regarding speed and punctuality of transport which new, more commercially-minded customers want.

With the globalization of markets, the Kazakhstan economy will change gradually from the current natural resource-oriented economy to a service-oriented economy. This economic structure change will lead to an increase of freight transport needs for final products, general cargos and parcel. It is desirable that more rapid and punctual transport services with door to door characteristics be provided for freight by promoting their containerization.

(5) Development of Off-rail Transport System

Feeder transport between railway stations and end users is carried out by them using their own exclusive tracks, if they are big customers. On the other hand, general customers, who don't have exclusive tracks, rely on transport by their own trucks or through trucking companies.

Under the future logistics environment associated with market economy development, it is expected that the number of trucks will increase and the range of their activities will expand. That may encourage the shift of general cargo from railway to truck. Apart from large volume cargos to be carried by customer-owned trucks, general cargos at stations or small volume cargos may be transferred to truck transport. This can cause an unfavorable situation in which only cargos that cannot be transported by trucks will be left to railway transport.

(6) Reform of KTZ, More Competitive Enterprise

KTZ leads the transportation market for natural resource goods such as coal, mineral ores, crude oil, etc., so it is making huge profits now. Although it is appreciated for its contribution to development in Kazakhstan, however, no optimism is warranted regarding the future situation of the railway freight transport market, taking the drastic changes due to the progress of the market economy into consideration. In fact, truck transport in European countries gained a relatively dominant position in the freight transport market of the countries concerned. In addition to economic change in Kazakhstan itself, another freight market challenge from China is foreseen due to construction of new routes from the Chinese side now in progress.

In this respect, it is crucial for Kazakhstan railways to create a new freight market focusing on container freight, develop appropriate transport systems as a trade hub country and establish effective marketing systems in order to keep its leading position in the freight market.

7.1.4 Railway Infrastructure Enhancement

(1) Providing and Improving Railway Transport Facilities and Rolling Stock

Due to the network structure concentrating on Russia, railway sections linking north and south regions have an enough traffic capacity owing to their double track and electrification. Compared to this, the railway sections linking east and west regions are mostly single track without electrification although a new railway line is planned to link directly between the east and west regions. However, if the new shortcut route is provided between the east and west regions, its validity for improving international and domestic trade condition is questionable because the destination of current freight flow between the east and west regions is located along the existing railway corridors. Therefore double tracking and electrification for the existing railway lines connecting the east and west regions are more worthwhile for the time being. In addition to improving the track facilities, stations, rolling stock and communication facilities are also crucial matters because the current level of railway facilities remains in old and obsolete condition.

1) Providing and improving railway network

In view of improving logistics functions, the improvement of railway transport facilities is proposed to ease the current bottleneck sections and secure the east-west transport link in the railway network. According to the MTC, the current railway improvement projects with priority are summarized as shown in Table 7.1-2 and Figure 7.1-1.

Table 7.1-2 Proposed Railway Network Improvement Projects

No.	Sections	Projects	Length	Estimated Investment Cost (Million Tenge)
1	Mangyshlak-Bautino	New line	135.1km	22,759
2	Yearaliyevo-Kuryk	New line	14.4km	2,900
3	Khorgos-Sary-Ozek	New line	235km	50,000
4	Dostyk-Aktogay	Electrification	312km	31,200
5	Almaty-Aktogay	Electrification	558km	55,800
6	Aktogay-Mointy	Electrification	521km	52,100
7	Khromtau-Altynsarin	Electrification	402km	40,200
8	Zhezkazgan-Beyneu	New line	1,020km	171,830
9	Makat ~ Kandyagash	Electrification	392km	39,200
10	Makat-Atyrau	Electrification	124km	12,400
11	Atyrau-Aksaraiskaya	Electrification	310km	31,000

Source: MTC

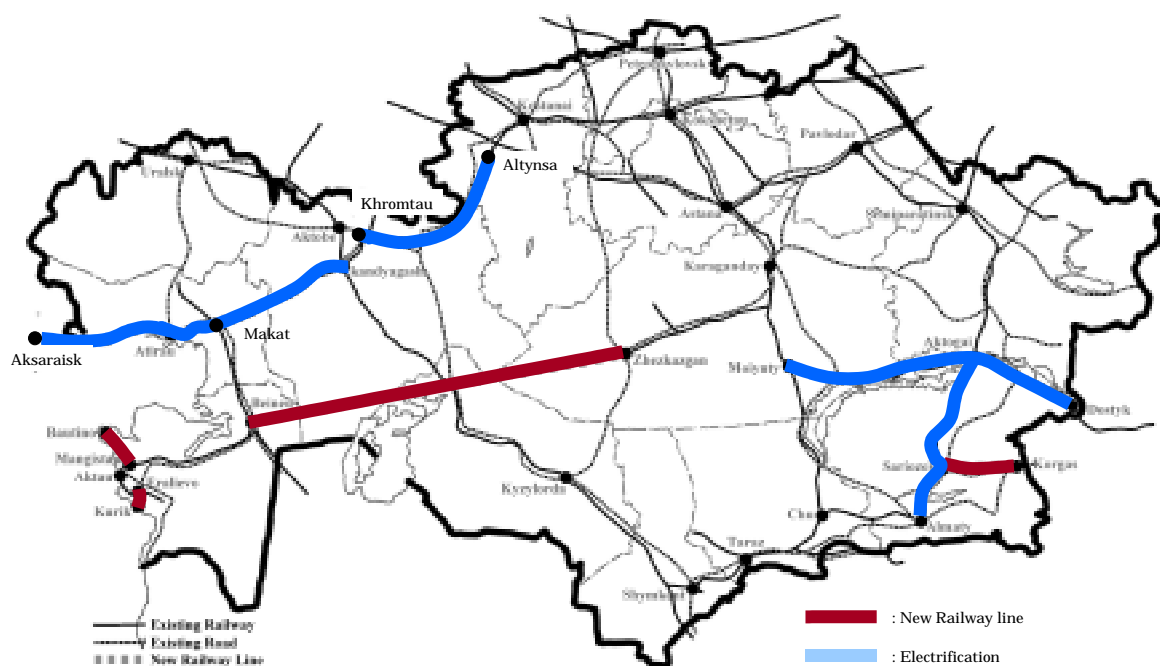


Figure 7.1-1 Improvement of Railway Network

2) Providing and improving rolling stock and container stock

Rolling stock and container stock should be improved immediately because the number of containers owned by KTZ and wagons, especially container wagons, are absolutely short for growing demand. To cope with this situation, foreign wagons and containers are used in practice, but such wider circulation of foreign freight equipment cannot be an essential solution for maintaining stable freight transport.

(2) Reviewing location of freight station

1) Location of freight stations and reinforcement of freight functions

According to the demand forecast result, considerable growth of domestic and import freight volume, especially general freight, is expected.

Regarding the future allocation of railway freight terminals, the following are pointed out:

- i) Integrated freight terminals: selected for the nodal points collecting or distributing domestic freight and comprising focal points for international freight flows, i.e.;
 - Astana covering the northern part,
 - Aktobe covering the western part,
 - Almaty and Shymkent covering the southern part, and
 - Aktau covering the Caucasus region.
- ii) Regional freight terminals: selected for freight terminals which are located in regional economic centers and where general freight amount is expected to be high.

For the regional freight terminals, further arrangement is to be examined taking futures trend in regional economies into account. Dostyk station is designated as an international freight transshipment node.

Table 7.1-3 Type of Logistics Center and its Function

	Integrated Terminal	Regional Terminal	Other Terminal
1. Transshipment (Between Railway)			
2. Transshipment (Between Mode)			
3. Transshipment (Between Gauge)			
4. Mix Loading and Unloading			
5. Distribution and Storage			
6. Distribution and Processing			
7. Freight Information			
8. Customs			

Table 7.1-4 Improvement Plan got Railway Freight Terminald

		Present Status			Recommendation	
		Main Yard	Yard	Present Container Terminal	Integrated Terminal	Regional Terminal
1	Astana	*		*	*	
2	Pavlodar		*	*		*
3	Karaganday	*		*		*
4	Chu	*				*
5	Taraz		*	*		*
6	Kokshtau	*				*
7	Symkent	*			*	
8	Aktobe		*	*	*	
9	Atyrau		*	*		*
10	Kandyagash	*				*
11	Uralsk		*			*
12	Kostanai		*	*		*
13	Zana Semei		*	*		*
14	Almaty	*		*	*	
15	Aktau		*		*	*
16	Dostyk		*	*		*

Integrated freight terminals are planned in major cities, i.e., Astana, Almaty and Shymkent as terminals handling mainly general cargos, with multiple freight functions such as transshipment, general cargo loading, storage, logistics information center and smooth truck access. In addition, they cover the reloading and storage functions for containers. Furthermore, logistics centers by commodity should be planned.

The regional freight terminals are dedicated to loading and unloading and storage functions for containers. In addition, they function as logistics center by commodity, i.e., coal, oil, cement and agricultural products, depending on local logistics needs.

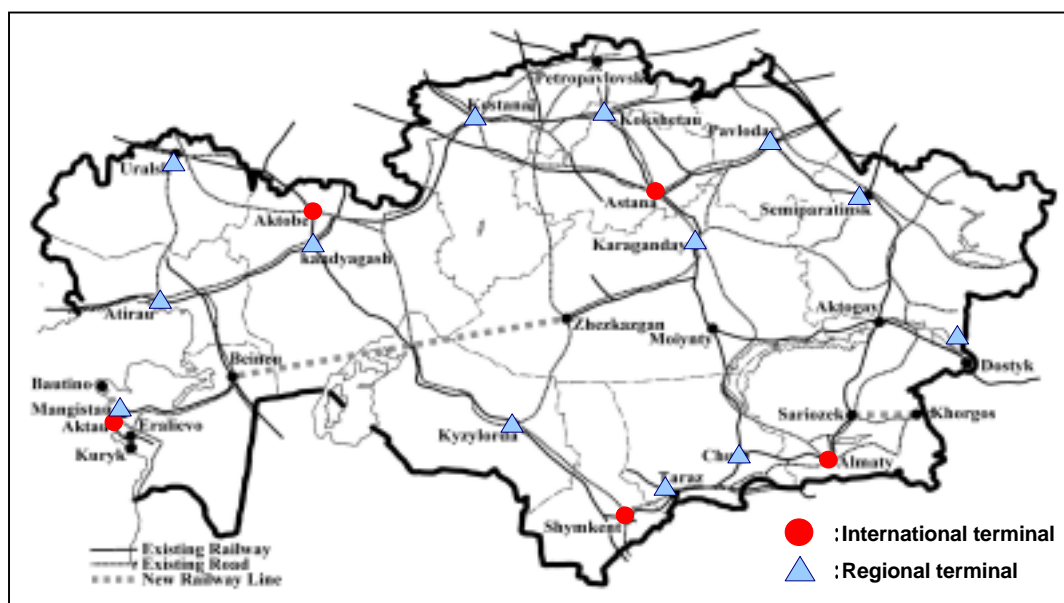


Figure 7.1-2 Improvement of Freight Terminals

2) Rough cost estimation of freight station improvement

Focusing on container freight, required costs for freight terminal improvement are estimated as shown in Table 7.1-5.

Table 7.1-5 Container Terminals

Name of Station	Container handling volumes (thousand ton)		Estimated cost In bill. KZT
	present	2010	
Karagandy	500	600	1.0
Urarsk	500	1000	1.0
Almaty	700	1000	1.0
Atyrau	450	700	1.0
Shymkent	500	700	1.0
Aktau	400	700	1.0
Semipalatinsk	350	700	1.0
Taraz	350	700	0.5
Pavlodor	200	300	0.5
Kostanay	200	300	0.5
Kandyagash	200	300	0.5
Astana	400	500	100
total	4,750	7,500	10.0

Note: 1. Container handling volumes show targets based on general cargos.
 2. Estimaten is made by average improvement cost for the existing facilities.
 Source: JICA Study Team estimation

(3) Improvement of Railway Freight Transport System

1) Reforming the railway freight transport system

At present, most freight trains are operated through several intermediate yards where some of the freight wagons in the train are released and other wagons with the same destination are coupled to the directional train set in their place. This system is rational in terms of stable and efficient transport. However, in the mid-term, considerable growth of general cargo demands is expected compared with bulk cargo, according to the demand forecast. It is necessary to arrange a freight train formation system coping with container freight or specific commodities. For the requirements of such freight train needs, i.e., faster and more reliable transport, the following measures should be taken.

- Shift of general cargo to container transport should be promoted. In addition, by introducing express container train services, it will be easier to secure the existing freight users and develop new customers.
- For the transport of oil, cement and agricultural products bound for diverse destinations, fixed type transport services for specific commodities should be developed and regional commodity terminals established.
- To meet the demand for small lot freight, freight train services for consolidated container cargo should be provided between main stations.
- Operation patterns of freight trains should be divided into three types, i.e., regular operation, seasonal operation and ad hoc, and train schedule formation should be arranged according to market needs.

2) Promoting container freight transport

According to the demand forecast result, container freight growth is expected in the future. Regarding the containerization of general cargos, this is only a change of transport means, if the transport system itself does not change, although some cost reduction is expected in cargo handling. In order to fully benefit from containerization, it is necessary to make freight transport more rapid, reliable and economical.

Operation of container freight trains is considered to be the best solution for this purpose, but at present it is difficult to introduce daily scheduled operation of container trains because of insufficient container freight volume and relatively large transport units for freight trains in KTZ. For the time being, it is more realistic to run rapid container trains mixing normal wagon freight between major stations.

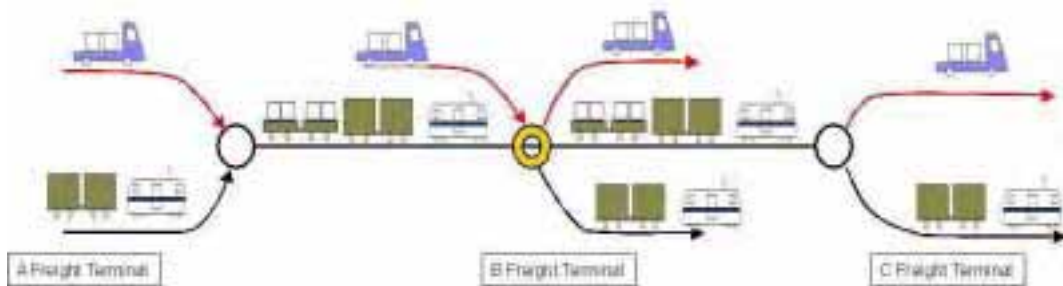


Figure 7.1-3 Image of Container freight express train

(4) Providing Railway Access Transport System (Railway Feeder Transport)

In order to establish reliable and convenient logistics services, it is necessary to integrate railway transport with its feeder transport. At present, the feeder transport is provided by regional forwarders or truckers who are not affiliated with KTZ. However, regarding the comprehensive freight terminals and regional freight terminals in which integrated transport services are required between line haul and feeder, the feeder transport means should be provided also by KTZ affiliate companies such as KTS and Kedentransservice. This would improve total freight services through railway and truck and establish reliable door to door freight services.

7.1.5 Container Transport Development Plan

(1) Current Situation and Issues of Railway Container Transport

In 2006, 244,222 containers were transported and this accounted for around 2 million tons. Comparing this with total freight volumes, the volume of container transport remains a relatively small portion. The reasons for this are as follows:.

- i) Relatively small amount of containerizable goods
- ii) Insufficient rapid and punctual transport services required
- iii) Shortage of containers and freight wagons for container transport
- iv) Few freight stations for container cargos and their obsolete equipment with inadequate function
- v) Insufficient measures to promote containerization for general cargos

Although respective examinations will be required, the following measures are proposed to develop container transport fully in general.

(2) Provision of Container Freight Terminals

1) Location of container freight terminals

Current railway container freight handling is carried out through 11 main stations, but their coverage is not broad enough to support the full transport network of 14,000km in length. However, it makes no sense to provide freight container services at every freight station because that requires freight yard space and special equipment for container handling. Otherwise, the manual work of vanning/devanning of containers detracts from the merits of container freight. Therefore, it is proposed that container freight terminals should be planned taking integration with cargo delivery and adequate service coverage into account.

The location of the main freight terminals is as in Figure 7.1-2. Among them, container freight terminals will be located selectively, taking into account container freight demand and mode linkage with truck services.

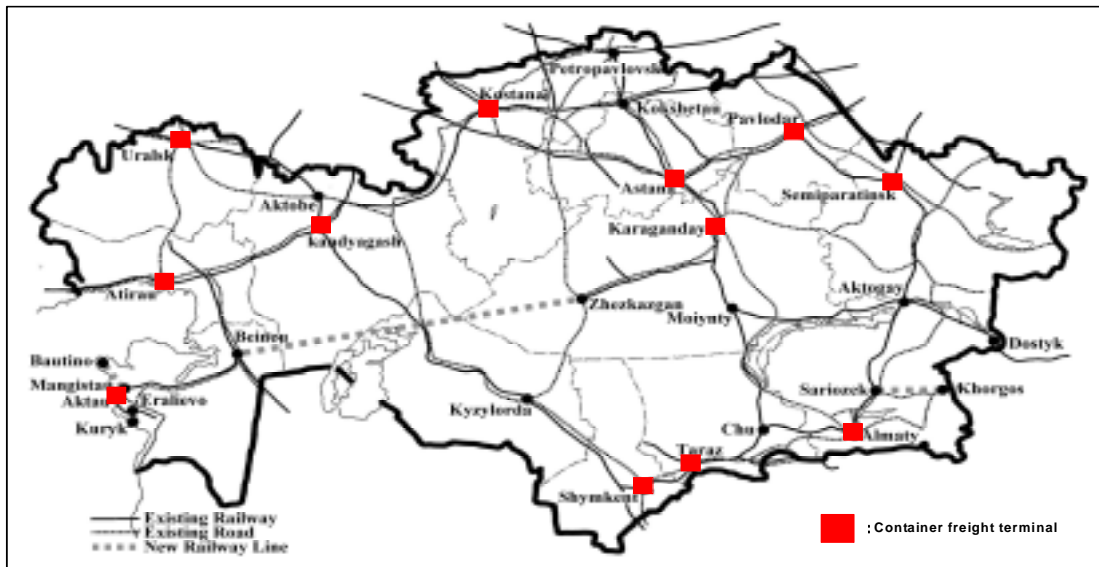


Figure 7.1-4 Location of Container Freight Terminals to Be Improved

2) Layout of freight facilities and equipment in the freight terminals

i. Replacement and upgrading of present freight facilities

It is pointed out that the freight facilities of existing freight terminals are in an obsolete state. For example, Astana freight terminal has an area of 200,000 m² consisting of container loading yards, general cargo handling space, heavy cargo yards, coal handling space and cargo storage, but there are several problems such as obsolete loading facilities, unpaved cargo space and cramped working space. Access roads to freight stations are also narrow and unpaved. As a whole, the current situation of Astana freight station might not be attractive to client needs. Urgent replacement of freight facilities and upgrading are needed together with improvement of the facility layout plan.

ii. Improvement of facility layout in freight terminals

Most railway freight transport is carried out by conventional freight trains composed/released at intermediate freight yards in their operation. For freight terminals mainly handling general cargoes, as the terminal facility layout plan coping with the increase of container freight which requires rapid train operation, it is desirable to locate the freight terminal in a series of cargo yards and the dispatch/acceptance tracks in a series of loading/unloading tracks so that container freight trains can be operated independently.

- A) Layout plan locating the freight terminal in a series of the freight yards, to make it possible to eliminate shunting operation between them
- B) Simplification of related works by securing necessary train length for loading/unloading tracks together with a series connection of the freight yard and freight terminal
- C) Having enough space for temporary container storage
- D) Having various functions of loading/unloading, storage and sorting for the major container freight terminals
- E) Providing a logistics information network between the major container freight terminals

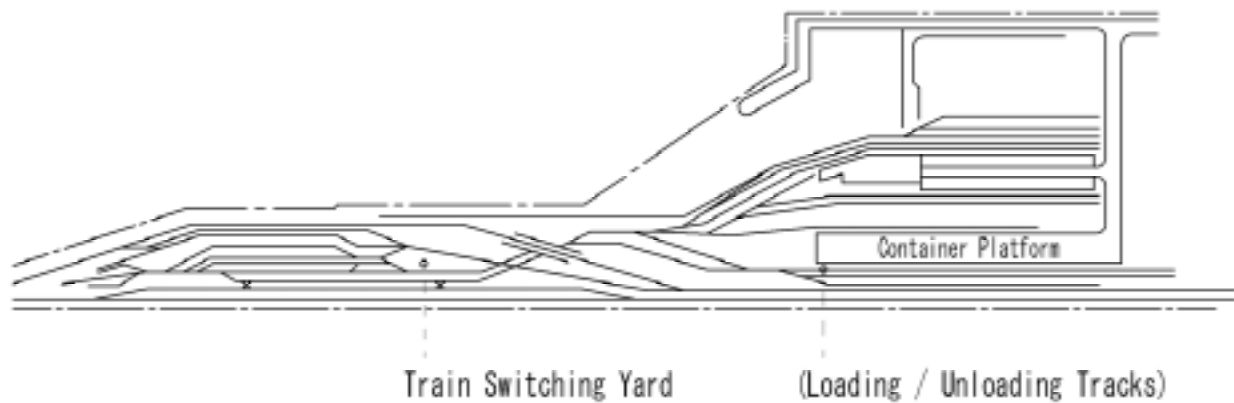


Figure 7.1-5 Facility Layout Concept in Freight Terminals

3) Provision of multiple logistics functions in major container freight terminals

In general, both cargo loading and storage functions are necessary for railway container freight terminals as a connecting point between railway and truck transport. In addition to this basic function, if the railway wants to promote container freight as a main player in improving the logistics system, it is desirable to provide multiple logistics functions in order to maintain smooth freight flow for the major freight terminals such as Almaty and Astana. At present, since these stations have large vacant areas, it is recommended to develop them for provision of multiple logistics functions.

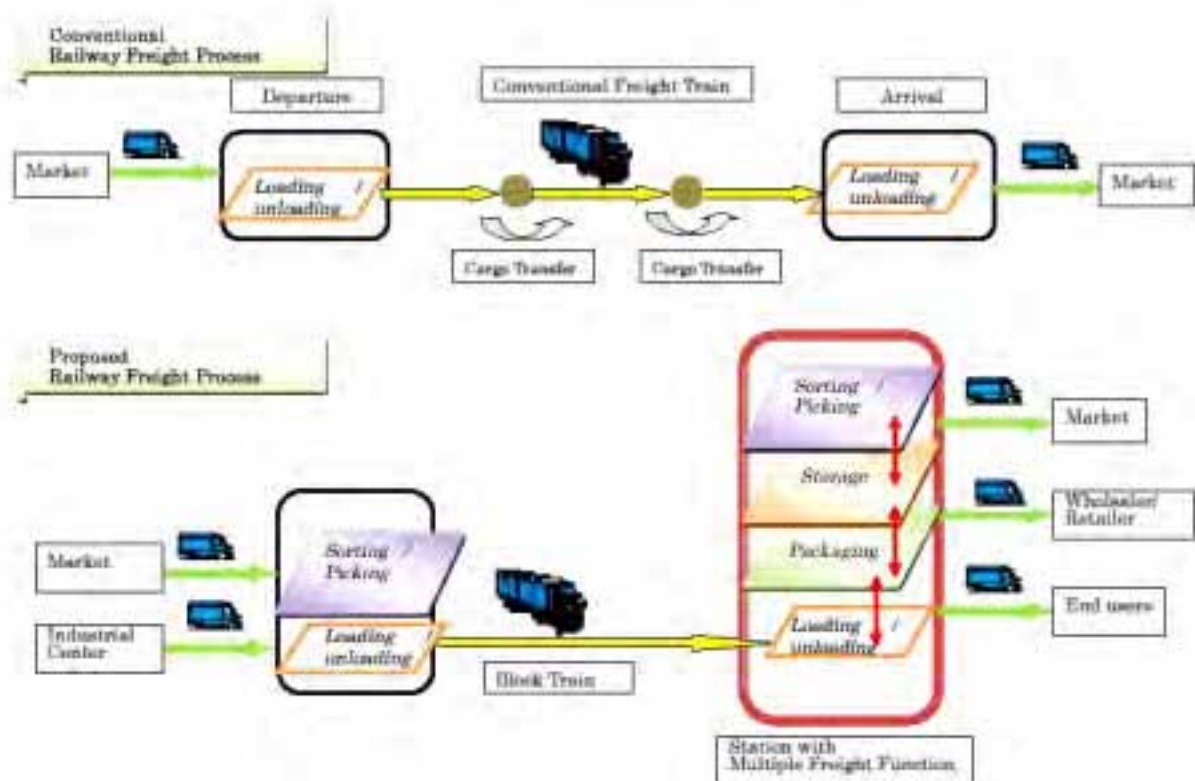


Figure 7.1-6 Multiple Freight Function Terminals Concept Scheme

4) Introduction of E & S system (Direct loading/unloading in dispatch/acceptance tracks)

In order to support major container freight terminals, direct loading/unloading in dispatch/acceptance tracks (so called E&S system in JFR) would be applicable to the intermediate container freight stations on the trunk line. Simplification of container handling and significant reduction of time/staff are expected by this method.

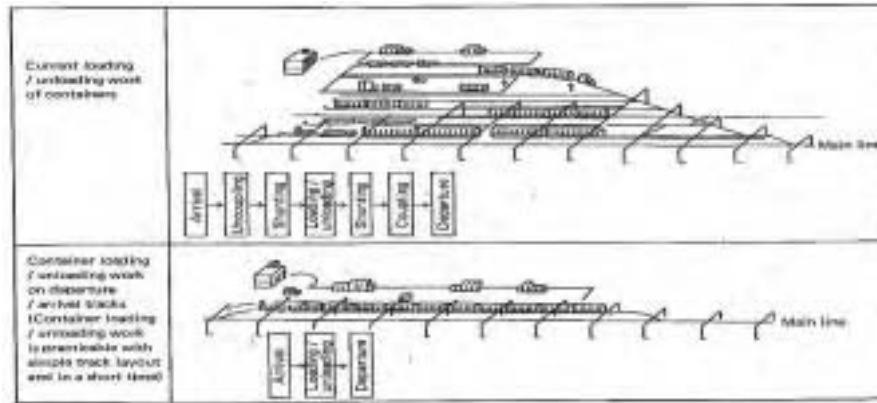


Figure 7.1-7 Direct Loading/Unloading Facilities Concept

(3) Provision of Containers and Container Wagons

Out of approximately 8,600 containers owned by KTZ, 6,200 containers are small-size containers, i.e., 3t and 5t. The small size containers are acceptable for the transport of consumer appliance goods, but are inferior in load capacity and tariff aspects when promoting containerization for international general cargos. The number of larger-size containers such as 20 ft. containers should be increased.

Although the required container wagons exceeding 1,000 container wagons owned by KTZ are covered by incoming foreign containers, container wagons are always in short supply. This is an urgent issue especially at Dostyk station, where transshipment could be delayed due to the wagon shortage.

Estimation of required container volume and container wagons (reference purpose only)

- Required container volume

Out of 8,600 containers currently owned by KTZ, around 70% are containers of the 3 ton and 5 ton classes. The actual number of containers in 2006 is classified and shown below.

	3 t	5 t	20t	40t	Empty	Total
Domestic	1337	2816	4520	848	20889	30410
Export	1677	4699	6129	1102	29160	42767
Import	4364	7908	18730	43,768	2813	77583
Transit	5191	8947	1552	29374	34427	93462
Sum	12,569	24,370	30,931	75,092	87,289	244,222

- Current total number of containers is estimated at 5,200 after conversion in TEU. Assuming annual container transport volume of 2 million tons, the average number of containers dispatched per day is estimated at 784.¹
- Assuming that the average utilization rate of containers is 10%, the required volume of

¹ Volume of containers dispatched = annual container transport volume/330 day (annual freight days) /8.5 tons (average weight of loaded container)*1.1 (contingency 10%)

containers is estimated at about 7,840 TEUs in the current basis. Comparing this with the volume of containers owned at present, i.e., 5,200 TEUs, there is a shortage of 2,640 containers. However, since there are additional containers incoming from foreign countries and the average utilization rate might be less than 10%, it appears that the shortage will not become critical.

iii. As for future container transport volume, this is estimated at 5 million tons in 2010 and 7 million tons in 2017, and the estimate of the required containers in each case is as follows:

- Containers needed in 2010: 16,300 (utilization rate in 2010 increases to 12% from 10% at present)
- Containers needed in 2017: 18,300 (utilization rate in 2017 increases to 15%)

- Container wagons needed

At present, the number of container wagons is estimated at approximately 2,000 wagons and the balance of the required number of wagons is compensated for by extra wagons incoming from the external broad gauge area. Regarding container wagons, the required number of wagons is calculated in the same way as containers needed.

Wagons needed at present: 3,921 wagons

Wagons needed in 2010: 8,169 wagons

Wagons needed in 2017: 9,150 wagons

In particular, the lack of container wagons will become a serious problem at Dostyk station where the gauge break takes place, accompanied by the increase of incoming container flow from China. This requires urgent countermeasures.

(4) Container Freight Train Operation

It is important to secure rapid and punctual transport in container transport. Although the transport means is changed from conventional wagons to containers in the container freight system, the advantages of a container transport system might not materialize if container trains are operated in the same way as conventional freight trains operated between yards, even taking considerable simplification in loading/unloading works into account. On the contrary, this would have an adverse effect on higher cargo needs when loading space efficiency decreases. For this reason, it is recommended to introduce a dedicated railway container train route with rapid and punctual transport between the sections where heavy container transport needs are expected.

Container train operation routes should be created from possible areas because currently there is not enough container transport demand to create exclusive container train formation at one time, although such train formation is desirable. In practical terms, the system should be implemented along with the following scenario.

- Introduction of a method to consign container cargos to conventional freight trains operated between major freight yards
- Introduction of a method to operate express trains between yards and allow coupling with

conventional freight wagons

- Introduction of a method to operate the exclusive train between transport blocks which stand for several freight terminals

Of these, it is recommended to consider potential based on container transport demand. To make implementation possible, a public relations campaign about the advantages of container transport should be considered.

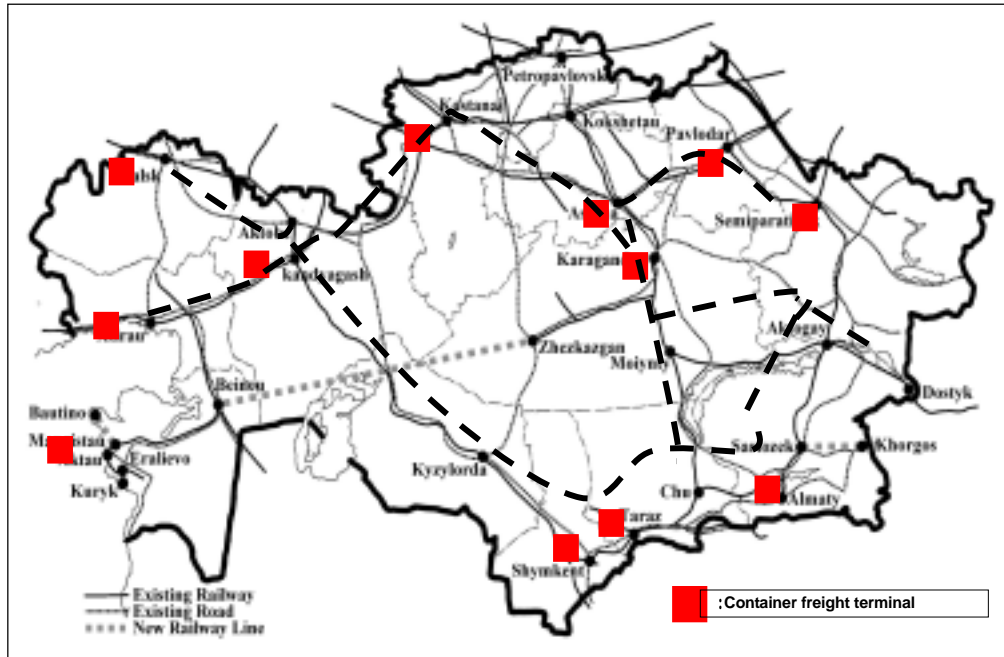
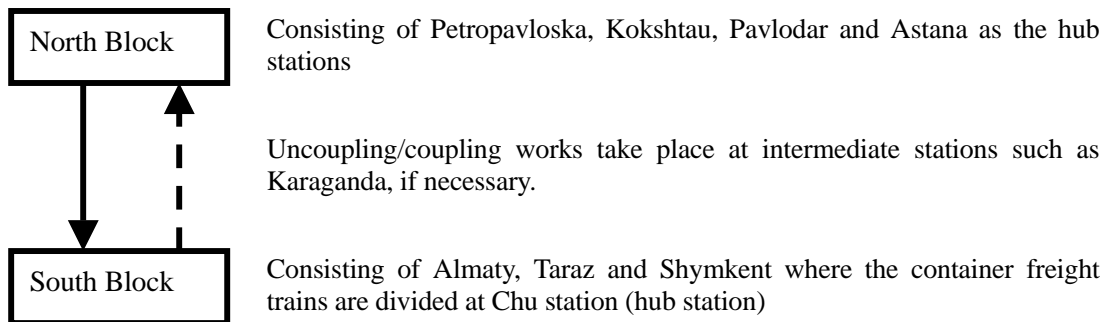


Figure 7.1-8 Rapid Container Train Routes (Plan)

As already mentioned, it is difficult at the moment to operate exclusive container freight trains on a regular operation basis because there is not enough demand for railway container freight to sustain it. However, according to the recent transport situation for container freight, the following are considered as measures to make exclusive container freight train services possible.

- The number of container wagons incoming from China via Dostyk is about 50% of total incoming wagons and annual figures of containers are 90,000 TEUs. These figures are equivalent to 300 containers per day, of which half are containers for Almaty. Even at present, it is possible to set up a 2 round-trip operation of exclusive container freight trains to Almaty from Dostyk station.
- For the second step, rapid freight train routes, which are mainly operated for container freight trains and connect between container freight terminals, should be arranged. If there is surplus of freight capacity, the freight trains can couple normal freight wagon fleets. The route plan should be arranged after close examination of actual freight movements.
- For the third step, specific exclusive container freight train services should be introduced between the south and north freight blocks where considerable container transport demand exists, as shown in the following chart.



- Notes:
- Aiming at daily operation (more than 300 days in a year)
 - Transshipment of container wagons and freight wagons is carried out at the junction stations on several freight routes
 - Collection and distribution of container freight is carried out at each hub station.
 - Direct loading/unloading is conducted at intermediate stations between major freight terminals.

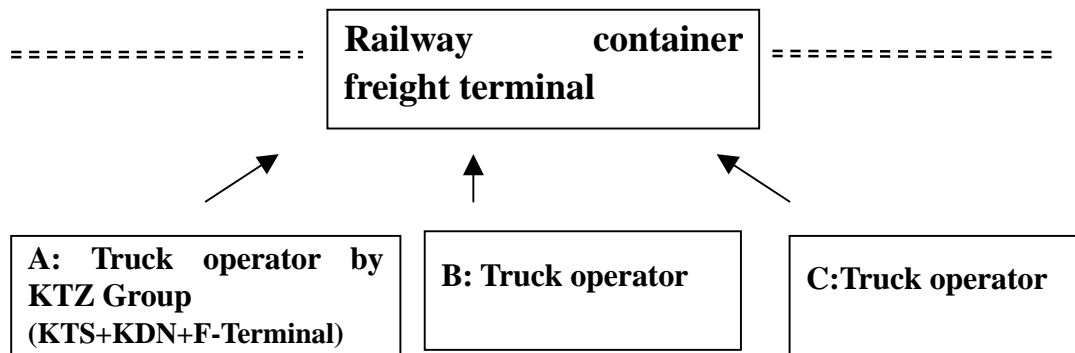
Among these steps mentioned above, the needed steps should be taken to formulate operation plans for (i) and (iii) over the short term.

(5) Off Rail (Freight Transport from Railway Stations to Final Destination) Transport Services

Since container transport services are designated to be provided from door to door, integration with off rail transport providers is essential in addition to providing principal railway transport services. This integration would be accomplished according to the following scenarios.

- i. Close coordination between railway transport service providers and truck transport service providers (established on mutual agreement or contract basis.)
- ii. Railway transport service providers start providing truck transport service.
- iii. Integrated transport services, including railway transport arrangements, are delegated to truck service providers.
- iv. As a result of market competition by many truck service providers, integrated transport services materialize.
- v. Off rail transport is provided by the truck service providers appointed by the railway service providers.

At present, railway plays an important role in freight transport in Kazakhstan. At the same time, container transport is expected to provide high quality freight services in the future. Regarding railway freight transport, close integration of railway transport with truck transport should be arranged as freight terminals are reorganized and regional freight terminals are established. In this regard, railway transport should take a leading position to establish integrated transport enabling door to door transport service. Accordingly, it is recommended that KTZ commit to promoting such close integration between on-rail and off-rail. In this case, free access to the off railway transport market by truck transport service providers should be allowed, to maintain appropriate market competition. Railway freight operators, including KTZ and its related companies, should be developed as total logistics service providers providing railway transport, multi logistics terminals and off rail transport.



(6) Improvement of Information Management System of Cargo Transport

In railway transport, train operation efficiency was the main concern which was focused on and targeted to achieve transport with fully loaded trains, in the era when railway played a leading role in logistics. Under this situation, speedy communication to get the information on train and wagon movements was an important requirement in order to prepare necessary work arrangements.

The more competition from other transport systems the railway freight market faces, the more crucial becomes the need for information management systems for customers .

At the early stage of rail freight transport in Japan, telephone systems were used for transmitting the service information from the central operation department to each facility and communication between stations and freight yards in order to coordinate operation and work with each other.

Later, starting in the 1940s, an early-stage train formation message system was introduced for communication between freight yards, which saved the work of distributing information and made its work more accurate.

In the 1960s, transport information systems were enhanced for introduction of exclusive container trains and liner freight trains.

In parallel with these improvements, the information management system, which had previously only connected from point to point, has been expanded to a more integrated one connecting stations and freight yards nationwide in a network by its central computer systems.

Moreover, associated with more sophisticated and diversified needs in logistics, the enhancement of transport quality in general from departure to arrival is required now. In this situation, the system needs to extend to include marketing information such as inquiries from customers, references to location of wagons in operation and advance notice of arrival.

Although computers are in use in part of the KTZ systems, they seem to be used mostly for business management or statistics purposes. In term of routine operation, practical communication between stations and transport bases (freight yards) is carried out by telephone and fax lines. Consequently, it seems that accuracy and speed of information transmission, which control transport dynamically, are not sufficient for speeding up transport planning.

60% of the railway freight in KTZ is bulk cargo and freight routes are relatively fixed. These cargos, which are generally shipped in specific style of transport by regular customers, are highly dependent on railway

transport: In the choice of transport systems by customers, the quality of the information system is not very important. However, for transport of food, sundry goods, fertilizer, etc. in the remaining 40% of cargos, railway transport cannot meet its customers' needs only by accepting cargos that customers bring to the station, loading those cargos into wagons and operating the trains.

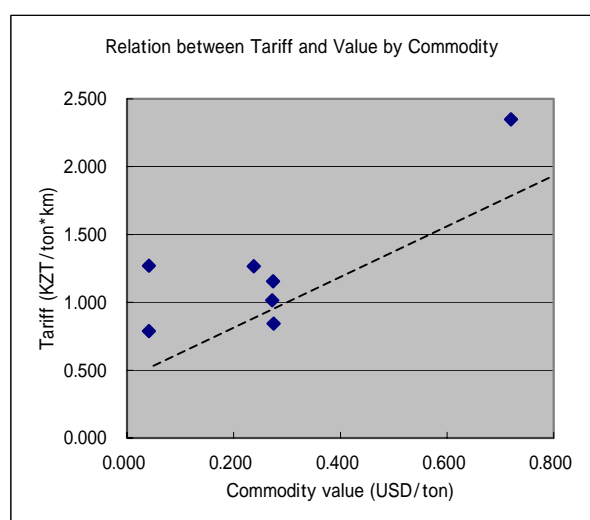
New information management systems must be able to handle management information including the sales situation of container trains and location of containers or container wagons in operation. Also, information managements must be carried out within its systems to accept reservations for sales orders from consignors, transport cargos accepted for shipment in accordance with customers' needs, assure their arrival schedules and provide the consignees with the sales information like advance notice.

Furthermore, automatic calculation of fares and charges or dealing with ledger sheets in these information management systems will help to provide an efficient manning schedule.

7.1.6 Related Tariff Policy

(1) New Approach to Domestic Tariff Setting

Historically, the railway tariff system has developed as a traditional value-dependent tariff system in which those that can bear a higher price or have higher cargo value should contribute more to railway transport costs because of the railway's monopoly status in the market. This tariff system is still used in most freight tariff systems as shown in the example of domestic railway freight tariffs in Kazakhstan.



Source: MTC data, Customs data

However, as recent experiences in other countries show, this tariff mechanism may not be workable in certain market segments. In particular, when a strong competitor enters the market, many freight users dislike the discriminatory nature of the tariff and might choose another transport mode. In general, as the transport market becomes more competitive, it is difficult to maintain a discriminatory tariff system based on the natural monopolistic position and the tariff system has to focus on optimum resource allocation relying on demand price elasticity, the so-called Ramsay price principle. According to demand forecast, although bulk cargoes such as coal and metal ores still have a dominant freight position, an increase in

general cargo takes place simultaneously. At the same time, high economic growth makes the value of final products and intermediate products higher. It is very likely that freight users choose road transport with better performance for reliability and flexibility when transporting goods with high value per weight.

Rational pricing principles suggest that the operator should conduct sufficient market research to be able to extract bearable tariff level by customers – often different prices for different industries and products. Since this process must be carried out openly in a competitive market, differential value-pricing can only be sought through product and service differentiation (e.g., higher prices for premium or expedited service). Furthermore, the railway operator should devise a viable tariff system under market conditions including strong competition with other transport modes. At the same time, the necessary measures for transport facility and operation improvement should be taken.

(2) Tariff coordination issues

As described before, current international transit tariffs constitute two kinds of tariff systems, i.e., ITT (International Transit Tariff) and CTT or UTT (Unified Transit Tariff). Both are intended to apply to rail freight traffic between OSJD member countries. The mechanisms for setting tariffs are institutionally and legally entrenched. Although the tariff is based on ITT, national governments set domestic rates. The ITT scales allow heavy discounts, which compensate somewhat for the lack of rational costs and permit some commercial flexibility. In general, high transit tariffs appear to cross-subsidize domestic transport.

(3) Issues regarding tariff promoting international freight transport

Because the traditional ITT tariff structure is commodity and distance oriented, it is perceived an obstacle to multimodal transport for which unit rates and through tariffs per container unit would serve the needs of customers better and the lack of common through tariffs for containers constitutes the major institutional barrier to their wider application. Inclusion of common through tariffs for international container transport in the framework of ITT/UTT would promote containerization and multimodal transport in Central Asia.

7.2 Road Transport Industry Development Plan

7.2.1 Planning Concept

Road transportation in Kazakhstan is mainly used for medium or short distance inter- or intra-city transportation rather than long-distance hauling. There are two main reasons for this.

- 1) Because of severe weather conditions in winter, roads are sometimes closed to traffic in some areas, which prevents providing regular and stable road transportation services.
- 2) Because of the vastness of the country, the national road network cannot cover all the areas.

Another fundamental reason would be the nature of the cargo carried. Major commodities for import/export and domestic transportation in Kazakhstan are oil, mineral resources, cereals and grain. These are commodities suitable for mass transportation such as railway rather than truck.

However, depending on changes in the national economic structure, the situation regarding land transportation may be change. As the nation's economy shifts from natural resource-dependent to manufacturing-oriented, major cargo commodities will change to more value-added products which naturally need faster and on-demand transportation means. This leads the modal shift from railway to trucks.

Even at this moment, there would be more business chances for the truck transportation industry.

The advantages of truck transportation can be summarized as follows:

- 1) The cargo can be received/delivered at the customers' door.
- 2) The cargo can be accepted regardless of its quantity.

In other words, these are the areas where rail transportation cannot provide efficient services. It is important to clearly identify the functions of rail and truck transportation and find their respective grounds for services.

7.2.2 Future Freight Traffic Demand

Table 7.2-1 is derived from the statistical data and medium term forecast by the MTC.

Table 7.2-1 Future Truck Cargo Volume and Number of Trucks

Year	Freight transportation by truck (million tons)	Number of trucks (units)
2007	1,813	357,000
2008	1,964	388,000
2009	2,115	418,000
2010	2,266	449,000
2013	2,842	540,000
2015	3,226	602,000
2017	3,616	663,000

7.2.3 Road Network Development Plan

The primary target for road network development is rehabilitation of the following basic international transit corridors, which also form an integral part of the republican highways of Kazakhstan.

Route 1	Tashkent – Shymkent – Taraz – Almaty – Khorgos
Route 2	Shymkent – Kyzylorda – Aktobe – Uralsk – Samara
Route 3	Almaty – Karaganda – Astana – Petropavlovsk
Route 4	Astrahan – Atyrau – Aktau – Turkmenistan border
Route 5	Omsk – Pavlodar – Semipalatinsk – Maikapchagay
Route 6	Astana – Kostanay – Chelyabinsk – Yekaterinburg

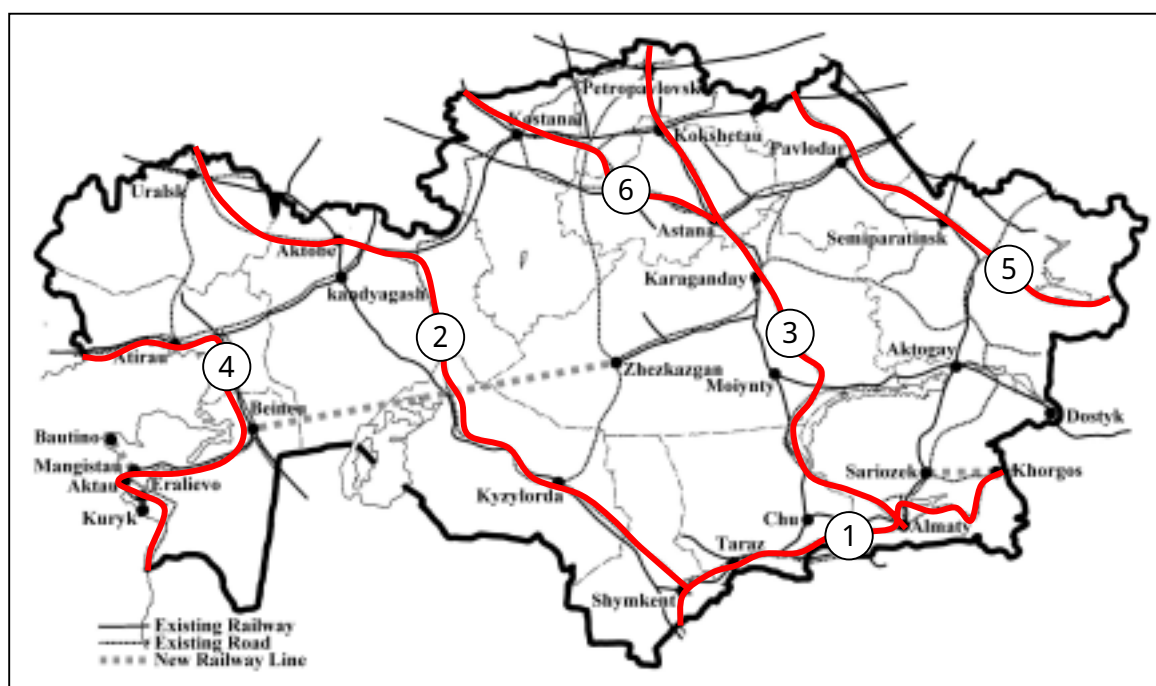


Figure 7.2-1 Basic International Transit Corridors of Kazakhstan

According to the implementation program of MTC, the following work will be performed on the republican highways during the period of 2006-2012.

Rehabilitation of Routes 1 to 6 is included within 7,205 km of rehabilitation.

Table 7.2-2 Type and Volume of Work for Republican Highways

(Unit: km)

Type of work	Volume of Work (km)	Volume of work every year						
		2006	2007	2008	2009	2010	2011	2012
Rehabilitation	7,205	488	737	882	1,203	1,277	1228	1,390
Overhaul repair	1,660	110	200	230	250	260	290	320
Mid-life repair	16,800	2,100	2,200	2,300	2,400	2,500	2,600	2,700
Total	25,665	2,698	3,137	3,412	3,853	4,037	4,118	4,410

Source: Transport Infrastructure Development Committee, MTC

By the implementation of this plan, it is aimed to achieve the following objectives:

Objective 1	Bring 86% of republican highways to the level of defect-free by international standards
Objective 2	Improve the condition of the road to an all- -year-round undisturbed status
Objective 3	Decrease the level of traffic accidents caused by road conditions
Objective 4	Improve the condition of a total of 412 bridges to meet the requirements on carrying capacity and overall dimensions

The road network development plan covers both republican roads and local roads.

Total funding requirement is US\$ 9,864.5 million, the breakdown of which is as follows:

Republican roads	US\$ 6,381.5 million
Local roads	US\$ 2,084.8 million
Project for state-private partnership	US\$ 1,398.2 million
Total	US\$ 9,864.5 million

Type of work and yearly spending program for republican roads are as follows:

Table 7.2-3 Type of Work and Budget for Republican Roads

(Unit: million US\$)

Type of work	Total Budget	Budget for every year						
		2006	2007	2008	2009	2010	2011	2012
Construction/Reconstruction	4,797.0	340.6	532.0	655.8	731.0	773.5	829.3	934.8
Overhaul repair	568.3	31.8	69.2	79.6	86.5	90.0	100.4	110.8
Mid-life repair	581.5	60.0	67.7	75.4	83.1	90.8	98.5	106.2
Maintenance/Landscaping	429.6	41.1	46.2	53.8	61.5	69.2	76.9	80.8
Scientific research	5.0	0.4	0.8	0.8	0.8	0.8	0.8	0.8
Total	6,381.5	473.9	715.9	865.4	962.9	1,024.3	1,105.8	1,233.3

Source: Transport Infrastructure Development Committee, MTC

Type of work and yearly spending program for local roads are as follows.

Table 7.2-4 Type of Work and Budget for Local Roads

(Unit: million US\$)

Type of work	Total Budget	Budget for every year						
		2006	2007	2008	2009	2010	2011	2012
Construction	67.1	2.9	10.7	11.5	7.5	9.2	13.1	12.3
Reconstruction	531.1	5.2	49.9	75.9	106.1	106.9	92.0	95.1
Overhaul repair	853.6	21.9	90.5	101.4	126.4	150.4	174.3	188.8
Mid-life repair	317.9	25.2	31.6	38.0	42.2	45.9	55.6	77.8
Maintenance/Landscaping	315.1	28.2	34.6	38.5	43.2	49.0	56.6	65.0
Total	2,084.8	83.3	217.3	265.3	325.4	361.4	391.5	440.6

Source: Transport Infrastructure Development Committee, MTC

Details of projects for state-private partnership are shown in Table 7.2-5.

Table 7.2-5 State-Private Partnership Project for Roads

No.	Section	Length (km)	Effect	Required funds (million US\$)
1	Shadkar – Aralsk	200	Reduction of distance West-East by 200km	197.2
2	Beyneu – Shalkar	500	Reduction of distance West-East by 200km	489.9
3	Karabutak – Torgay	200	Reduction of distance West-East by 200km	196.6
4	Aralsk – Zheskazgan	200	Reduction of distance West-East by 200km	199.5
5	Almaty – Issyk – Kul	62	Reduction of distance North-South by 200km	242.2
6	Tortkol – Shoulder – Turkestan	119	Providing access to historical/cultural places	72.7
	Total	1,281		1,398.2

Source: Transport Infrastructure Development Committee, MTC

7.2.4 Enhancement of Truck Industry Development

One effective measure for the enhancement of the truck industry in Kazakhstan is to promote the carriage of international cargo (import, export and transit) by truck.

At the initial stage, international cargo was carried mainly by foreign operators. But in recent years, there has been a growth in the share of operators from Kazakhstan engaged in foreign trade road transportation to and from Kazakhstan. The percentage of domestic carriers is more or less 50% of the total transportation between Kazakhstan and other countries. In 1995, the union of Kazakhstan Automobile Transport Operators (KazATO) joined the International Road Transport Union (IRU) and was approved as a member of the TIR Convention in 1996. The volume of transit cargo by road is less significant. Annual volume is estimated about 0.1 million tons, while import/export cargo going by road is about 3.5 million tons. But circumstances may change depending on the development of Chinese trade.

The New Eurasian Land Transport Initiative (NELTI) was formed to establish a road transportation bridge between China and Europe through Kazakhstan. The association estimates that with minimum improvement in the procedures and infrastructure at border crossing points, annual cargo volume can be developed up to 1.5 million tons per year.

For the enhancement of truck industry in Kazakhstan, the following measures should be considered:

1. Creation of favorable conditions for the development and consolidation of the Kazakhstan motor transport operators' position by implementation of a reasonable assistance policy
2. Simplification of procedures and reduction of time required at truck border crossing points
3. Modernization of the border point infrastructure

7.3 Proposed Port and Maritime Transport Development Plan

7.3.1 Importance of Port and Maritime Transport

In order to enhance the transit transport potential of Kazakhstan, various measures have been taken in order to improve the efficiency of rail and road transport in Kazakhstan. It is equally important to take the same step to improve port facilities and maritime transport means so that the East-West multi-modal transportation route can be completed without leaving any missing links.

7.3.2 Future Seaborne Traffic Demand

Oil is the dominant commodity transported through the Caspian Sea.

Table 7.3-1 shows the actual cargo quantity handled at Aktau Port, which is practically the only commercial port in Kazakhstan.

Table 7.3-1 Cargo Volume at Aktau Port

(Unit: 1,000tons)

Commodity	2001	2002	2003	2004	2005
Oil	5,035	5,552	6,971	8,289	8,913
Steel	1,060	571	835	1,011	1,024
Grain	84	209	5	13	33
Other	23	23	23	33	48
Ferry cargo	199	593	246	346	350
Total Non-oil	1,366	1,396	1,109	1,403	1,455
Grand Total	6,401	6,948	8,080	9,692	10,368

Source: Aktau International Sea Commercial Port

Table 7.3-2 shows the total cargo handled at Aktau Port in 2005 and estimated cargo projections in the future.

Table 7.3-2 Cargo Projections for Aktau Port

Unit: 1,000tons

Commodity	2005	2010	2015
Oil	8,913	9,000	20,000
Steel	1,024	1,250	1,550
Grain	33	1,500	1,500
Others	48	520	1,295
Ferry cargo	350	350	350
Total Non-oil	1,455	3,620	4,695
Grand Total	10,368	12,620	24,695

Source: Aktau International Sea Commercial Port (2005) and World Bank (future)

Oil

Currently, about 9 million tons of oil are shipped from Aktau Port. A sharp increase in oil exports is expected in line with the development of the offshore Kashagan oil field. The commencement of oil exports from the new source will be around 2010-2015. The increased volume will be handled at an expanded facility at Aktau Port and/or the newly constructed Kuryk terminal. All the oil is transported by the tankers.

Non-oil

The portion of non-oil shipments is very small (about 10%), but this will increase in the longer term. It is estimated that total non-oil cargo shipments will increase from 1,455 thousand tons (2005) to 3,620 thousand tons in 2010, and 4,695 tons in 2015. Out of the 4,695 thousand tons, about 3,000 thousand tons are steel and grain which usual move on a full shipload basis. Therefore, the total expected amount of pure general cargo in 2015 will be 1,645 thousand tons.

7.3.3 Port Development Plan

In order to cater to the increased volume of export cargo, port expansion and development are planned for the following ports along the coast of the Caspian Sea in Kazakhstan.

Aktau Port:

The outline of on-going Aktau Port expansion project can be summarized as follows:

Expansion Site	Northern part of present facility
Planned facilities	4 oil berths (depth 9.0m) 4 general cargo/container berths (depth 6.0m) 3 support berths (for smaller craft)
Cost estimation	32.7 billion Tenge
Completion of work	2020

The work has started, currently working on dredging of the basin and preparation of the ground.

This expansion will give the port an additional 10-11 million tons handling capacity for oil exports and 1.5 million tons for general cargo. Adding existing facilities, total capacity of the port will be expanded to 18-19 million tons of oil and 3 million tons of general cargo.



Figure 7.3-1 Aktau Port Expansion Plan

In addition to the above expansion project, there is a plan for another expansion as follows:

Expansion Site	Southwest part of present facility
Planned facilities	5 oil berths 5 general cargo berths

This plan gives the port an additional 12 million ton capacity for oil export and 2 million tons for general cargo. But this is still at the planning stage and it is uncertain at the moment if this will actually materialize.

Kuryk Port

There is a plan to build a new oil loading terminal at Kuryk Port, which is located about 60 km south of Aktau area. The outline of the Kuryk Port development project can be summarized as follows:

Port development Site	Kuryk, 60km south of Aktau
Planned facilities	2 oil berths (single buoy mooring system)
Cost estimation	16-24 billion Tenge
Completion of work	n/a

The plan is developed chiefly by Kazmunaigas. The Kuryk project is primarily designed as an oil loading terminal, and no general cargo handling facility is planned at the moment. The new gigantic offshore Kashagan field will start oil production by 2010 and Kuryk terminal is intended to provide access to sea-borne transportation for Kashagan oil. The project is expected to cost between 16-24 billion tenge. As shown in Table 7.3-3, it is estimated that Kazakhstan oil export through the Caspian Sea will reach the 30 million ton level by 2020.

Table 7.3-3 Kazakhstan Oil Exports

(Unit: million tons)

	2000	2003	2005	2010	2015	2020
Pipeline	14.8	30.7	42.2	70.0	95-110	115-130
Tanker	3.4	7.0	8.7	7.7	20-35	15-30
Rail	6.5	5.0	2.2	0.5	5	5
Total	24.7	42.7	53.1	78.2	135	150

Source: World Bank

Bautino Port

The port of Bautino is located to the north of Aktau. It is a small port mainly serving local fishing boats, but recently it acquired a new function as a supply base for offshore oil drilling facilities. It is necessary to develop and maintain the port facility for its role as Kazakhstan's main offshore supply base.

7.3.4 Present situation of maritime transport in the Caspian Sea

Oil is the dominant commodity traded in the Caspian Sea. Bulk oil is transported by tankers owned and operated by the shipping companies of the Caspian coastal countries, Kazakhstan, Azerbaijan and Russia. Azerbaijan has a long history in Caspian shipping and still maintains the leading role in the area. In this region, transportation of non-oil commodities including general cargo and containers is not active because 1) the majority of non-oil commodities are dry bulk commodities such as steel products or grain which is carried on a full-ship basis and 2) pure general cargo is relatively small in terms of cargo volume. However, general cargo is likely to become significant in the future as the Kazakhstan economy diversifies from natural resource dependency to manufacturing and demand for consumer goods increases.

The outline of current status in the marine transport sector of each Caspian coast country is shown in Table 7.3-4.

Table 7.3-4 Shipping Companies in the Caspian Sea

Country	Shipping Company	Fleet
Azerbaijan	Caspian Shipping Company (CASPAR)	38 Tankers 25 Dry-cargo vessels 9 Ro-Ro vessels
Iran	Khazar Shipping Line	6 Dry-cargo vessels
Kazakhstan	Kazmortrasflot	4 Tankers (+2 on order)
Russia	North Caspian Shipping	2 Ro-Ro vessels
	Makhachkala International Sea Commercial Port	2 Ro-Ro vessels

Azerbaijan

The Caspian Shipping Company (CASPAR) is the oldest shipping company in the Caspian Sea. In addition to 38 tankers, they have 25 dry-cargo vessels and 9 Ro-Ro type vessels. Details of the dry-cargo vessels are shown in Table 7.3-5.

Table 7.3-5 CASPAR Dry-Cargo Fleet

Type	Nizami	Teymur Ahmedov	Qahraman Medhi	Mahmud Rahimov	Akstafa	Maestro Niyazi
LOA (m)	123.5	118.1	114.0	117.4	120.0	140.0
Breadth (m)	15.0	13.4	13.0	16.4	15.0	16.65
Draft (m)	4.5	3.95	3.73	4.5	4.2	4.52
Gross ton	3,777	3,048	2,484	4,110	3,398	n/a
Net ton	2014	1,112	n/a	1,233	1,735	n/a
Deadweight	4,150	3,135	3,135	4,485	4,016	5,885
Speed (kts)	11.7	10.5	10.4	11.0	11.5	10.2
Number of sister vessels	10	2	10	1	2	1
Ships gear	Yes	Yes	No	No	Yes	No

Out of 9 Ro-Ro type vessels that they own, 7 vessels are rail-ferries and 2 vessels are Ro-Ro cargo ferries. Details of the Ro-Ro type vessels are shown in Table 7.3-6.

Table 7.3-6 CASPAR Ro-Ro Fleet

Owner: CASPAR	Ro-Ro Railway Ferry	Ro-Ro Cargo Ferry
LOA (m)	154.47	125.90
Breadth (m)	18.30	16.22
Draft (m)	4.50	5.66
Gross ton	11,200	6,884
Net ton	n/a	2,065
Deadweight	3,950	4,673
Speed	17.15	16.40
Loading capacity		
Rail Wagon (unit)	28	0
Trailer (unit)	n/a	88
Passenger car (unit)	70	n/a
Container (TEU)	n/a	136
Passenger (person)	202	12
Number of sister vessels	7	2
Name of vessels	Akademik Hesen Aliyev Akademik M.Topchubashov Azerbaijan Dagistan Mercury I Nakhchyvan Professor Gul	Bestekar Fikrez Emirov Bestekar Gara Garayev



Figure 7.3-2 CASPAR Ro-Ro Railway Ferry

Iran

The Khazar Shipping Line is a 100% subsidiary of IRISL (Islamic Republic of Iran Shipping Lines), the Iranian national shipping company. The company was established in 1992 to demonstrate the presence of the Iranian flag in the Caspian Sea. They are active in the transportation of non-oil cargo. They have 6 dry-cargo vessels and 2 vessels are chartered from Russian and Azerbaijan owners. They have ordered 4 new ships from the Volgograd shipyard in Russia and the first ship will be delivered soon. Currently, most of the non-oil cargo between Kazakhstan and Iran is carried by Khazar. They are interested in establishing their own container terminal at Aktau Port under the on-going port expansion project. Although the Khazar shipping fleet is currently composed of all dry-cargo ships, they have a plan to acquire one Ro-Ro type vessel to enhance their shipping activities and strengthen their presence in Caspian Sea shipping.

Details of their fleet are shown in Table 7.3-7.

Table 7.3-7 Khazar Shipping Fleet

Vessel Name	Iran Basheer	Iran Moein	Iran Baseer
Dead weight	2,885	2,495	3,960
Length(m)	93.63	87.90	128.16
Width (m)	13.40	11.10	13.40
Draft (m)	4.40	4.08	4.34
Year built	1982	1986	1991
Type of vessel	General Cargo/Dry bulk	General Cargo/Dry bulk	General Cargo/Dry bulk
Vessel gear	No	No	No
Vessel Name	Iran Ghadeer	Iran Kabeer	Iran Daleer
Dead weight	3,960	5,885	5,885
Length(m)	128.16	140.00	140.00
Width (m)	13.40	16.65	16.65
Draft (m)	4.34	4.52	4.52
Year built	1992	1993	1994
Type of vessel	General Cargo/Dry bulk	General Cargo/Dry bulk	General Cargo/Dry bulk
Vessel gear	No	No	No



Figure 7.3-3 Khazar Shipping Dry-Cargo Ship

Russia

There are many Russian shipping companies operating in the Caspian Sea, but most of them are engaged in tramp service on a full-load basis. Among those Russian shipping companies, there are two companies that own/operate Ro-Ro type vessels, although their operation is not on a regular basis and they do not provide scheduled service to the trade.

North Caspian Shipping has 2 Ro-Ro type vessels. They are the sister-vessels of CASPAR’s Ro-Ro cargo ferry built in the mid 1980s at the Neptun Shipyard in Rostock. Makhachkala Port has two Ro-Ro vessels. They are rather new (built in 2005) with bigger capacity for carrying rail wagons (52 wagons).

Details of Russian Ro-Ro vessels are shown in Table 7.3-8.

Table 7.3-8 Russian Ro-Ro Fleet

Owner/Operator	North Caspian Shipping	Makhachkara Port
LOA (m)	125.90	154.50
Breadth (m)	16.22	18.30
Draft (m)	5.66	4.70
Gross ton	6,894	8,547
Net ton	2,068	3,135
Deadweight	4,673	6,012
Speed	13.5	14.0
Loading capacity		
Rail Wagon (unit)	0	52
Trailer (unit)	88	n/a
Passenger car (unit)	n/a	n/a
Container (TEU)	136	n/a
Passenger (person)	12	12
Number of sister vessels	2	2
Name of vessels	Kompozitor Novikov Kompozitor Rakhmaninov	Makhachkala-1 Makhachkala-2

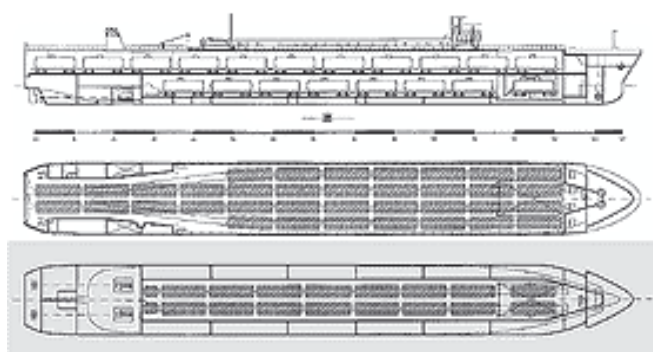


Figure 7.3-4 Makachkala Port Ro-Ro Vessel

Kazakhstan

National Maritime Shipping Company, “Kazmortransflot”, is the only shipping company actively participating in maritime transportation. The company is owned by the MTC and Kazmunaygas. The main business of the company is tanker operation. From 2005, they took delivery of a newly built tanker fleet of 12,000 D/W from a Russian shipyard. Six tankers are built in a series and owned by Kazmortransflot and Mobilex. For the moment, Kazmortransflot does not have any dry-cargo vessels. Thus, Kazakhstan is relying on ships which belong to other countries for export and import of all its non-oil commodities.

7.3.5 Maritime transport development plan

(1) Introduction of New Type of Ships

A national dry-cargo fleet should be developed with a new type of ship.

The cargo projections for non-oil commodity as of 2015 are shown in Table 7.3.-9 (ref. Table 7.3-2).

Table 7.3-9 Cargo Projections

Commodity	Cargo volume per annum (thousand tons)	Remarks
Steel	1,550	Bulk shipment, non-containerized
Grain	1,500	Bulk shipment, non-containerized
Others	1,295	Possible containerizable cargo Total 1,645 thousand tons
Ferry Cargo	350	
Total	4,695	

If 10% of general cargo (others + ferry cargo), about 165 thousand tons, is containerized, this is equivalent to 11,000 TEUs per annum (average @15 tons per TEU). When possible increase of container cargo from China destined to the Caspian littoral countries is taken into consideration, it is important to provide suitable bottoms for container shipment. At the initial stage of container shipment, general cargo ships fitted with container loading would be sufficient to cater to the demand. At a later stage, a full cellular container ship will be introduced. For efficient operation at ports of calls, a special container yard equipped with gantry cranes may be required.

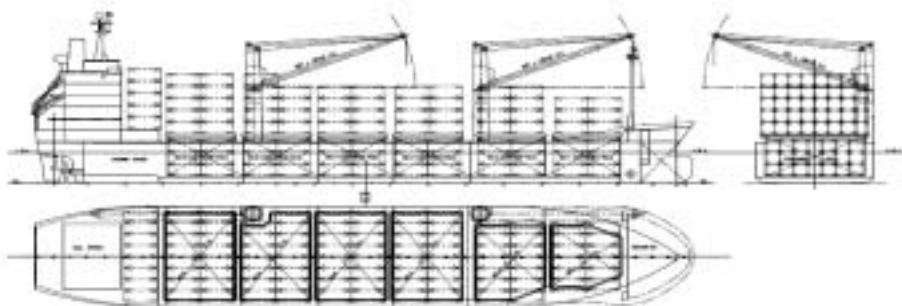


Figure 7.3-5 600TEU Full Container

In case of Ro-Ro rail ferries, the new type of ships should have more loading capacity for railway wagons for efficient transportation. Ro-Ro cargo ferries carrying trucks and trailers should be also considered as an alternative. Along with the development of the modal shift to truck transportation, demand for maritime transportation of motor vehicles will increase.

(2) Introduction of Modern Ship Operation

Along with the introduction of a modern fleet, it is also important to establish modern ship operations.

As general cargo or container ships carry various cargos which belong to numerous customers, it is important to maintain the announced shipping schedule and keep the scheduled departure/arrival date for each port of call. This is the main difference from the full-ship load type operation of the vessel.

In order to provide this kind of innovative service to the trade, proper training for employees, both for on-board crew and on-shore personnel, is required. Such a training mechanism should also be established.

7.4 Multi-Modal System Development

The so-called multi-modal logistics system stands for appropriate role-sharing between possible combinations of transport modes, i.e., railway, truck, ships and air. Several cargo handling methods, i.e., pallet system, containers and piggyback system, can be used to make multi-modal transport possible. In practice, the method using containers in combination with pallets is the most useful. In Kazakhstan, railway maintains a dominant position in medium to long range freight transport and truck is a suitable transport means for freight transport over shorter distances. Therefore, it is desirable from the viewpoint of the national interest to create an efficient freight transport system by combining both transport systems. Aiming at this target, the following measures are considered.

7.4.1 Railway Connection with Ports and Road Network

1) Rationalization in location of freight terminals

Specific major freight terminals are located at focal points of logistics streams by region, and at the same time, existing small-medium freight terminals are eliminated by integrating them with major freight terminals. Service coverage of major freight hub should be determined adequately taking the delivery cycle of feeder transport into account, so as to deliver arriving cargos in the morning and collect dispatched cargos within a day. In this regard, approximately 150 km is proposed as the service coverage distance.

2) Promotion of containerization for cargos

It is necessary to promote containerization for general cargos or other commodities suitable for container transport because containerization provides a universal transport means and can be a platform for a multi-modal freight transport system.

3) Provision of seamless freight transport services for local freight users

For local freight customers inconvenienced due to the elimination of local freight stations by terminal

integration, seamless transport connections between railway transport and truck transport should be provided on the basis of container freight.

4) Connection with port logistics flow

Because it is expected that transport connections between sea and land transport will increase in future logistics development such as the Aktau logistics terminal, it is necessary to provide transshipment facilities between both transport modes and smooth linkage. Regarding the transport mode connection, since most cargos shipped are considered to be international freight such as import, export and transit cargos, port access railway lines connecting with the adjacent railway freight terminal should be provided in order to operate container freight trains on international freight railway routes and to major cities.

Table 7.4-1 Provision of Multi Modal Freight System

Items	Short term (1-3 years)	Medium to long term (4-10 years)
Provision of multi modal freight system	Rationalization of freight terminal locations and establishment of container freight terminals Promotion of container freight expresses Promotion of modal integration with truck transport for off-rail transport from railway stations	Promotion with establishment of container freight terminals

7.4.2 Logistics Center

(1) Logistics Center Concept

Several terminologies concerning logistics facilities, such as logistics centers, logistics terminals, depots and distribution centers, are used. Although these terms are not used according to any clear definition, it is necessary to clarify their definitions and classify the terms in this report. The meaning and contents of these terms are as follows.

- Logistics center: In wider use, this term refers to a comprehensive logistics facility complex where cargos are concentrated and generated, but it is used mostly for the central logistics facilities of private enterprises with storage, transshipment, inspection, inventory management, packing, vanning, devanning, distribution, etc. functions
- Logistics terminal: The final point of transport mode for cargos, with transshipment, storage, etc. functions
- Depot: Warehouse or facility where commodities are stored and from where they are distributed
- Distribution center: Similar to logistics center, but focusing mostly on distribution
- Logistics park: Like an industrial park, a complex site park where logistics facilities are concentrated
- Land port: logistics facility on the inland border

Dry port: bonded (with customs office) inland logistics facility site distant from ports and borders (in Japan this is called an inland depot)

In this report, the development plan should deal with public or semi-public logistics policies and facilities. Therefore, the focus in this part is logistics centers, because terminals are final points of transport modes that are mostly supplied by public or semi-public transport, e.g., ports, airports, railways and roads. Logistics terminals necessarily have transshipment or (multi-)modal shift functions.

This part discusses only logistics centers for general cargos and container cargos, because bulk cargos are transported to limited large-demand consignees directly or handled specifically in Kazakhstan. In addition, the volume of general cargos will increase and containerization will inevitably advance in the future.

Furthermore, this part discusses only railway-related logistics centers with terminal functions, because truck terminals are usually constructed and operated by private companies and airport cargo terminals are constructed and operated by airport operators.

Trunk line cargoes are transported by the railways at present and hopefully will be in the future, too. In Japan, around the end of the high economic growth period (1965), Japan Motor Terminal was established by law as a special public corporation in order to rationalize increasing logistics demand, facilitate road traffic and improve urban functions. It built and operated four public truck terminals on the outskirts of Tokyo. However, it was privatized with the abolishment of the law in 1985. If the demand for truck terminals develops in Kazakhstan, those terminals will be supplied by private companies or trucking companies themselves. The government's role may be to support promotion of truck terminal construction by companies, if necessary.

(2) Demand for Logistics Terminal Freight

Based on the demand forecasts above (5.2 and 5.3), present and future estimated demand for general cargos are shown in Table 7.4-2.

Table 7.4-2 Demand for Terminals

Year	2005	2010	2017	2017/2005
General Cargo Demand (Mill. Ton) for Terminals	33.7	49.8	78.6	2.33

Note: It is assumed that the cargos requiring terminals are mostly transported by railways.

Source: JICA Study Team

Demand will increase 1.48 times from 2005 to 2010 and 2.33 times to 2017. However, demand shows the total and is different for each terminal.

(3) Functions and Configuration of Logistics Centers

1) Functions and scope of logistics centers

The basic functions of logistics centers in Kazakhstan should be as follows.

- Transshipment
- Sorting
- Storage

These are basic functions of terminal (logistics center) operators. Transshipment studied in this report is between trains or trains and trucks. Logistics center operators provide basic services to receive, send out and store cargos between receiving and sending after sorting. In addition to these basic functions, other functions, as shown below, can be supplied depending on need.

- Vanning/devanning
- Inspection of commodities
- Inventory management
- Packing
- Sorting related to consolidation
- Distribution
- Distribution processing
- Customs and other procedures
- Sales
- Exhibitions and conferences

These functions are mostly additional (value-added) to terminals and demand depends on the needs of forwarders and consigners or consignees. Forwarders, consigners or consignees need space for these functions. Sometimes, it is convenient for them to have such space in terminals or logistics centers. But if rent at centers is too expensive or cargo volume is too much or too little, they will not need the space or can establish their own logistics centers close to the terminals or at other convenient locations based on their own strategies. If terminal logistics center operators can supply suitable space at reasonable rent, forwarders, consigners or consignees may use the space for the functions above explained as follows.

- Vanning/devanning
Forwarders (consigners or consignees) assemble cargos into ULDs (Unit Load Devices: pallets, containers, igloos, etc.) or break down cargos from ULDs.
- Inspection of commodities
Consigners or consignees (or forwarders acting for them) check their cargos whether they are correct, damaged or missing.
- Inventory management
Consigners or consignees (or forwarders acting for them) manage their inventories of materials, products or parts for storage and supply these at the right time.
- Packing
Consigners or consignees (or forwarders acting for them) pack or unpack their cargos.
- Sorting related to consolidation
Cargos assembled into ULDs or broken down from ULDs are sorted by destination, use, classification, etc.
- Distribution
Consigners or consignees (or forwarders acting for them) receive or send their cargos for delivery.
- Distribution processing
Consigners or consignees (or forwarders acting for them) process their products. Distribution processing is usually a simple procedure like attaching price tags, wrapping, etc.
- Customs and other procedures
If the main cargos are imported or exported, customs and other related administrative functions are

attached to the logistics centers for convenience.

- Sales
Consignees as (import) wholesalers or retailers sometimes need space for sales.
- Exhibitions and conferences
Consigners or consignees sometimes need exhibition or conference space because the location of the centers usually gives them good access to their product transportation and participants.

Facilities with the functions above are as follows.

- Platforms for transshipment
- Warehouses for storage and inventory management
- Workshops for packing, vanning/devanning, etc.
- Offices
- Wholesale and retail shops
- Exhibition facilities
- Conference facilities

In order to expedite loading and unloading, cranes such as mobile transfer cranes and straddle carriers should be introduced for transshipment.

For advanced cargo handling and management, computer-aided automatic picking and sorting with inventory management can be introduced into warehouses.

When IC tags or RFID (Radio Frequency Identification) tags become more widespread in the future, automatic systems with handling machines such as conveyor belts will be more important.

2) Configuration (location) of logistics centers is important.

The logistics centers should be located in the following cities, depending on demand.

- Almaty
- Astana
- Aktau
- Dostyk
- Khorgos
- Taskala (Ozinki)
- Karagandy
- Uralsk
- Atyrau
- Shymkent
- Semipalatinsk
- Taraz
- Pavlodar
- Kostanay
- Kandyagash

In Almaty, there is a new logistics terminal for railways and trucks close to the station. In Astana, there is a plan to construct a similar logistics terminal close to the station as well. It appears that these terminals can respond to current demand. However, these terminals are close to the stations, which may cause traffic

congestion problems in the future. Therefore, it is necessary to control truck traffic in the central areas of the cities or plan to move them to the outskirts of the cities.

The logistics terminals in Aktau and Dostyk are described below (Chapters 10 and 11) in detail.

Khorgos and Taskala are border areas and are developed with foreign countries, China and Russia, respectively. It appears that each country is planning and designing logistics centers or terminals in its own territory despite the free zones, but the centers should be integrated into a single one by the two countries. Transshipment between not only railways but also railway trains and trucks is important. Truck terminals are also necessary in the free zones.

The other cities need logistics centers similar to those in Almaty and Astana, but their size depends on demand. According to the demand forecast above (Chapter 5), general cargo volumes can be estimated as shown in Table 7.4-3.

Table 7.4-3 General Cargo Volume Forecast (thousand tons)

City	2005	2010	2017	2017/2005
Karagandy	3,046	4,286	6,540	2.15
Uralsk	2,849	7,372	13,514	4.74
Almaty	2,683	5,100	8,904	3.32
Atyrau	2,389	3,589	5,648	2.36
Shymkent	2,254	3,531	6,113	2.71
Aktau	2,004	3,509	6,015	3.00
Semipalatinsk	1,902	3,418	6,081	3.20
Taraz	1,819	3,741	6,916	3.80
Pavlodar	1,311	1,623	2,329	1.78
Kostanay	1,268	1,613	2,355	1.86
Astana	759	1,091	1,649	2.17
Kandyagash	1,086	1,696	3,007	2.77

Note: These cities represent oblasts.
Source: JICA Study Team

Even in Almaty and Astana, there appears to be little demand for facilities such as shops and exhibition/conference space in addition to basic transshipment and storage at present. If consigners, consignees, forwarders and carriers require office or exhibition/conference space later, the terminal developers should reserve room for that space. Future demand for such facilities depends on the progress of logistics such as the just-in-time method and supply chain management, and changes in attitude of logistics-related companies.

3) Size

The size of the terminal is estimated by multiplying forecast general cargo by processed cargo volume to area ratio. Here it is assumed that site area per ton is 0.167 m²/ton and floor area per ton is 0.0243 m²/ton.

Table 7.4-4 Area Size Demand (in 2017)

City	Site Area (ha)	Floor Area (m ²)
Karagandy	109	158,923
Uralsk	225	328,396
Almaty	148	216,363
Atyrau	94	137,256
Shymkent	102	148,551
Aktau	100	146,169
Semipalatinsk	101	147,775
Taraz	115	168,060
Pavlodar	39	56,606
Kostanay	39	57,215
Astana	27	40,080
Kandyagash	50	73,068

Source: JICA Study Team

7.5 Information and Communication System Development Plan

Food, general goods, chemical fertilizer and other consumer goods which account for 25% of KTZ's railway transport will lead to severe competition with other transport modes and the conventional style of waiting for cargos brought into the station, loaded on the wagons and train departure cannot satisfy customers' needs.

New information management systems should:

- Make it possible to manage sales of container trains and rapid trains, and operation and location of containers and bogeys or carts
- Offer reservations for consignors and provide information, including guarantee of arrival station transport and arrival time with arrival announcement to customers

This will also affect other concerns such as

- Improvement of loading efficiency
- Support for work in terminals

(1) Current situation

- 1) ACTOM (Automated System for Transportation Operation Management) which is the existing main information system running at the KTZ data center in ASTANA on host computers. This system manages information on train departures and arrivals along with information on how the trains are made up. This information is sent in a timely manner from the departure station to the arrival station, which makes train and wagon handling such as train shunting, break-up and make-up at the stations efficient.
- 2) ACTOM also makes it possible to carry out location control and inventory control of wagons.
- 3) Container cargos are handled by KTS. Information related to containers is also handled in the KTZ systems.
- 4) Although major stations are connected to the KTZ main data center by satellite or fiber optic cable communication network, some smaller stations do not have such a connection. Even, some stations with network connections with the data center, are not provided with Local Area Network which connects

necessary places for providing information. As a result, at some stations the system cannot be well utilized.

- 5) In particular, there are fewer networks available at KTS container yards. Therefore, hand delivery of documents is necessary to enter the data, which causes delays and inaccuracy.
- 6) Dostyk station has had a fiber optic cable connection with China Railway installed and has been discussing data (i.e., arrival train information data, etc.) exchange with that organization. Other terminals, especially on borders, should be similarly equipped.

(2) Concept

- 1) Convenient and reliable transportation services to customers
- 2) Effective usage of wagons, containers, etc.
- 3) Support for effective work at the yards

(3) Scope

- 1) Direct reservation of container transportation by customers or forwarders and information provision to customers, i.e., current location, estimated arrival date and time at destination
- 2) Location and inventory control for trains, wagons and containers
- 3) Assistance and management reinforcement of terminal work
- 4) Implementation of adequate infrastructure of the information systems for effective use of systems (both of existing and new).

Five main terminals, including Dostyk and Aktau, and 11 regional terminals are the targets.

Integrated terminals	Astana, Symkent, Aktobe, Almaty, Aktau
Regional terminals	Pavlodar, Karaganday, Chu, Kokshtau, Zamble, Atyrau, Zana Semei, Dostyk

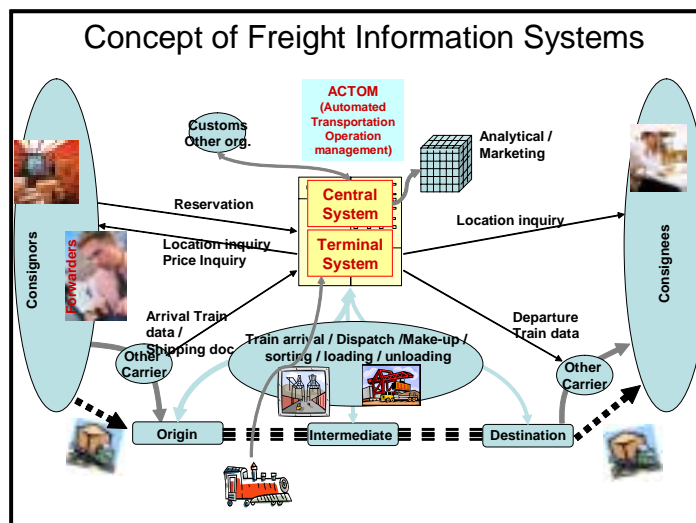


Figure 7.5-1 Freight Information Systems Concept

(4) Functionality

1) Reservations from customers and information provision to customers

a. Application for reservation

This is an application for train container or wagon reservation by consignors or forwarders. This allows the forwarders or customers to reserve a specific train or inform concerning arrival date. Collaboration with other carriers like China Railway, shipping companies on the Caspian Sea, etc. is necessary.

b. Location inquiry

Customers can check where their own cargos are or where they are being transported, on which train they are (to be) loaded, or the estimated arrival time at destination or transit stations, through the Internet on their own PCs.

2) Location traceability of trains, wagons and containers

a. All wagons and containers are identified by unique numbers. (Currently, all wagons have 8-digit identification numbers on their sides. Containers also have international standard codes such as 4 alphabet letter and 7-digit numbers, including a check digit. These numbers enable the system to identify the location of each wagon or container and its inventory by location).

b. Information is to be input to the system for each operation, such as arrival and departure of train to/from terminals, train break-up or make-up, sorting, loading/unloading of containers on wagons, etc. (Remark: information processing by train and wagon (information management at the train and wagon levels) is already being carried out.)

c. Arrival time at transit station or final destination is estimated (in case of export or transit, the final border station in the country).

d. Implementation of RFID, GPS and/or other technologies must be considered in order to control an individual wagon or container and trace it even when it is running between stations.

3) Assistance and management of terminal work

a. Provide information like arrival information and instructions for necessary work such as sorting, loading/unloading, dispatching, etc. in advance

b. Input the information on completion of the specified work

c. Consider use of mobile terminals to make it easier for workers to operate the systems, as well as bar-coding and IC tags

(5) Methodology

1) It is assumed that the existing transportation operation system (ACTOM) will continue to be operated and used, and that a new system enabling Web usage is developed in addition. Because these two systems have a close relationship with each other, it is necessary to develop an interface system between them. Sample interfaces required are shown below.

ACTOM=>New web system

Train operation data

Train make-up data

Shipping data

Types of master data

New web system=>ACTOM

Train location data

(Remarks: ACTOM may be rebuilt in the future. However, for system safety it is still necessary to isolate the open system for general users and the closed system within the organization. Therefore, the system interfaces mentioned above will be used continuously.)

2) The web system includes the functions below.

Consignees/forwarders master management

Receipt reservation for cargo transportation

Inquiry about cargo location and estimated arrival time

3) Data exchange system with third parties (data exchange function with other organizations)

A example is receiving train arrival information from China Railways at Dostyk station. This kind of data exchange such as receiving and sending data will be processed by the server at the terminals. Ideally, a common protocol should be defined among many parties in order to use the same systems to communicate with many counterparties. The Customs Control Committee is planning this kind of EDI network system. One of the recommendations is to join the discussion held in the CCC. Some of the data could be used by both Customs and KTZ. Therefore, it is more effective for many organizations to construct EDI data exchange systems.

4) Terminal server system

The terminal server systems store data sent from KTZ's central system (ACTOM) and to ACTOM temporarily. This avoids system stoppage even when the network is unavailable.

Described above, these servers will be utilized to mount a data transmission function for data exchange with the other parties. This is because these transmitted data are the most urgent at the said terminals or their counterparts. This is required to minimize the impact from network troubles and maintain close communication with the counterpart person in charge.

In addition, application systems are accommodated in the terminal servers to send information to field operating staff and allow them to input work completion information including sorting, loading/ unloading and dispatching. Figure 7.5-2 shows a rough outline of operations at the yards with the proposed new information system

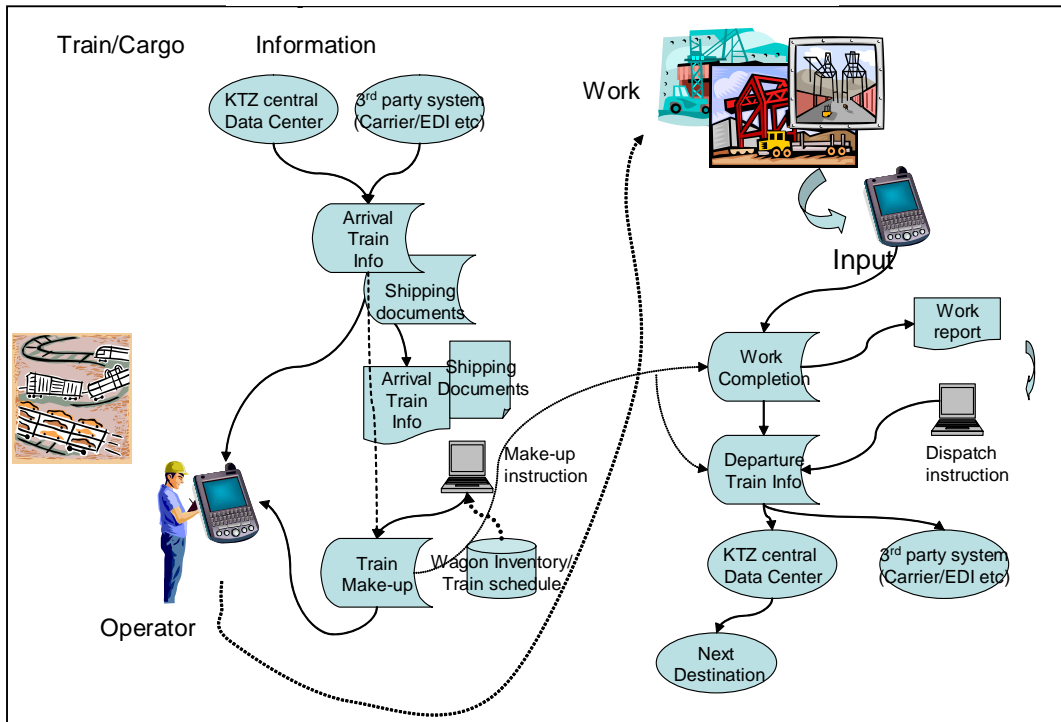


Figure 7.5-2 Outline of Operation

5) Data entry method for wagon/container identification numbers

When terminal field workers input information into the system, two of the items they input are wagon numbers and container codes. It might be difficult to input correct numbers or codes, and incorrect input could cause inaccuracy in the systems.

One of the ideas is to use IC tags bearing those numbers or codes and provide an easy data entry method by tag readers. Regarding wagons, the United States developed standard wagons with RFID tags inside and exported those to some countries. Containers do not have such a standard yet, although some studies are being carried out. This issue should be considered not only in KTZ or Kazakhstan but in cooperation with other players in freight transportation and neighboring countries. This report recommends to start studying this standardization for future implementation.

As an alternative, the implementation of PDAs will be helpful. They receive work orders for operators and instruct them about works, based on the expected arrival of trains and cargos. The operators can work following these instructions, and they can input the information that the specified work has been completed. A support system will be available for this input. If the operator inputs an incorrect number or code which is not included in the work order, the PDA will show an error. Also on the PDA, the operator can retrieve shipping document information linked from work orders, in order to confirm cargo information.

6) Location trace system

There are basically two ways of identifying the cargo’s location on rail. One is to identify each cargo by wagons and containers basis and the other is to trace each cargo by trains.

Of course, it is necessary to keep information about which wagons and containers are on each train. A comparison chart is shown in Figure 7.5-3.

There are also a few technologies that can be used to trace trains. Up to now, GPS has been the most practical way, but new technology such as GPS/GPRS technology or WiFi² will be practical soon. Both technologies can use existing antennas to communicate with equipment installed on the trains.

The direction of standardization and trends in new technologies applicable to transportation systems should be monitored continuously.

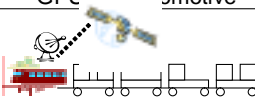
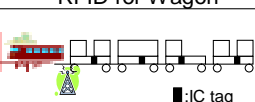
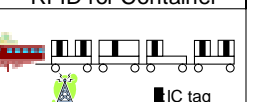
Ways of Container Tracing			
	GPS Locomotive	RFID for Wagon	RFID for Container
Image			
Description	<ul style="list-style-type: none"> · Train Make-up information is created as data, Train (Locomotive)-Wagons-Containers · GPS monitors the location at every minute. · Other technology may be applicable. 	<ul style="list-style-type: none"> · Linkage of Wagons and containers is created as data. · Every certain distance along railways, RFID readers are installed. 	<ul style="list-style-type: none"> · Container Location are captured. · Every certain distance along railways, RFID readers are installed.
Comparison	<ul style="list-style-type: none"> · Cost of GPS · Only locomotives need facilities. 	<ul style="list-style-type: none"> · Many RFID readers are to be installed. · RFID can be used at managing make-up trains. · Standard wagons with RFID is already installed in some countries. 	<ul style="list-style-type: none"> · Many RFID readers are to be installed. · RFID can be used at managing make-up trains. · RFID on containers are not standardized.
Achievement	<ul style="list-style-type: none"> · Japan Railway Freight 	<ul style="list-style-type: none"> · AEI(US) · US exports Wagons with this RFID to many countries 	

Figure 7.5-3 Comparison of Container Tracing Methods

² WiFi (Wireless Fidelity): standardized technology for Wireless LAN; Network components equipped with this can communicate with each other. Reach distance is generally around 100m from the antennas.

(6) Hardware / network

- 1) Network connection between the head office (data center) and all the terminals is mandatory. All 17 terminals already have a network connection either by satellite or fiber optic cable installed along the railways.
- 2) Inside the terminals, a Local Area Network which connects all of the working areas must be installed in accordance with the area size. This is very important for improving the terminal operation more effectively and accurately. Cabled LAN, wireless LAN or a combination of these must be installed.
- 3) There are a few ways of building a LAN as follows: a) fiber optic cable connection and b) wireless connection including b-1) WiFi, b-2) WiMax³ and b-3) Mobile phone which may be GPS or GPRS. The best network configuration will change along with the improvement of technology. Furthermore, it depends on the size of each terminal and its layout. The configuration proposed here is developed using a certain terminal model. A sample configuration for the Astana terminals is shown in Figure 7.5-5.
- 4) The terminal servers are explained in the previous section. These may be Window servers. Redundant configuration is required.
- 5) User equipment
Personal computers and printers are connected with the ACTOM systems and the terminal server. To promote more extensive use of the information systems, more units of the equipment will be necessary not only in offices but in the field. PDAs for field operators are equipped for information receipt and data entry.

The assumed necessary units of equipment in each terminal are summarized in Table 7.5-2

³ WiMAX (Worldwide Interoperability for Microwave Access): standardized fixed wireless communications which can communicate through two antennas with a distance of 50km by more than 50Mbps

Table 7.5-2 Equipment List

Unit	HandlingVolum	Terminal Ser	Office PC	Printer	Router	WiMAX	WiFi antenas	PDA	Cable	Hub/Modem
		unit	unit	unit	unit	pair	unit	unit	Kirometers	unit
Unit Price(US\$)		50,000	2000	200	30,000	5000	500	1800	3000	100
Astana	500	1	25	12	1	1	5	20	2.5	10
Pavlodar	300	1	15	8	1	2	3	10	1.5	6
Karaganday	600	1	25	12	1	2	6	30	2.5	12
Chu	400	1	20	10	1	2	4	25	2	8
Taraz	700	1	25	12	1	2	7	30	2.5	14
Kokshtau	400	1	20	10	1	2	4	25	2	8
Zamble	400	1	20	10	1	2	4	25	2	8
Symkent	700	1	25	12	1	2	7	30	2.5	14
Aktobe	400	1	20	10	1	2	4	25	2	8
Atyrau	700	1	25	12	1	2	7	30	2.5	14
Kandyagash	300	1	15	8	1	2	3	10	1.5	6
Uralsk	1000	1	30	15	1	3	10	40	3	20
Kostanai	300	1	15	8	1	2	3	10	1.5	6
Zana Semei	400	1	20	10	1	2	4	25	2	8
Almaty	1000	1	40	20	1	3	10	40	4	20
Aktau	700	1	30	18	1	0	6	40	3	17
Dostyk	400	1	10	5	0	3	9	50	3	8
Total	9200	17	380	192	16	34	96	465	40	187
Amount ('000US\$)		850	760	38.4	480	170	48	837	120	18.7
Grand Total Amount			3303.4							
(Remarks)		These figure are the supmption based on the estimated handling volumes								

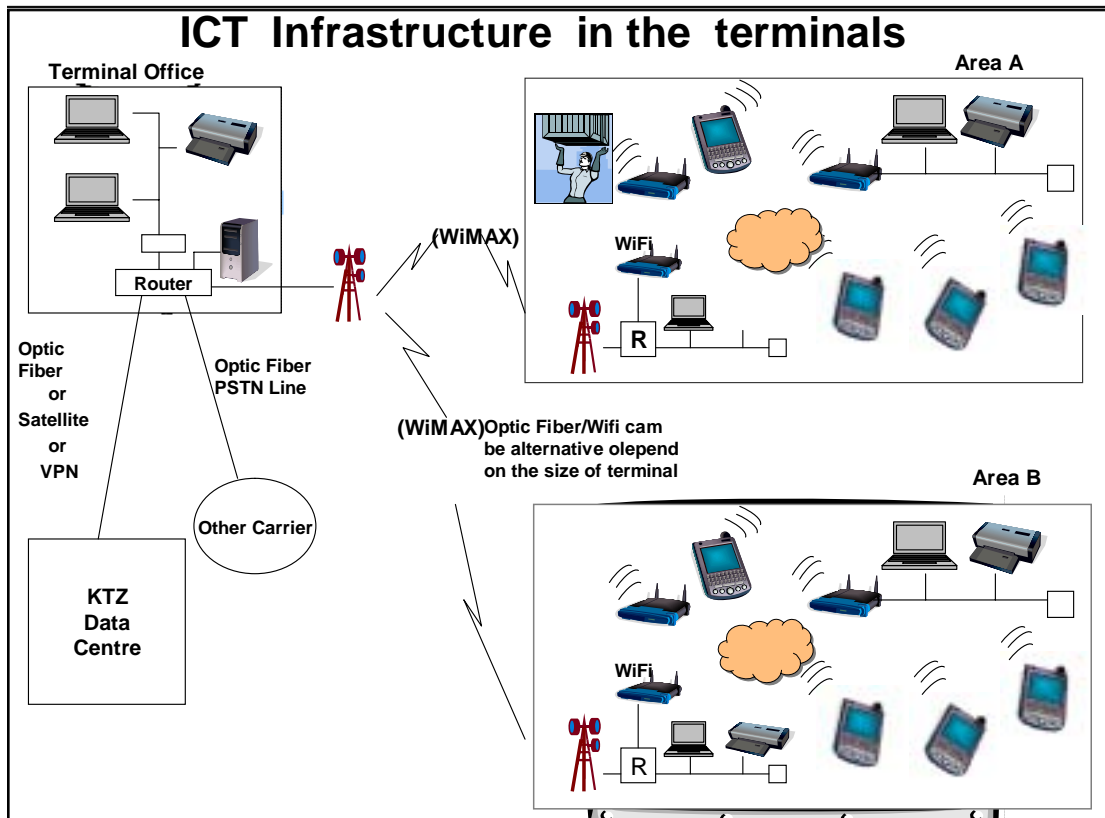


Figure 7.5-4 Image Concept of Infrastructure

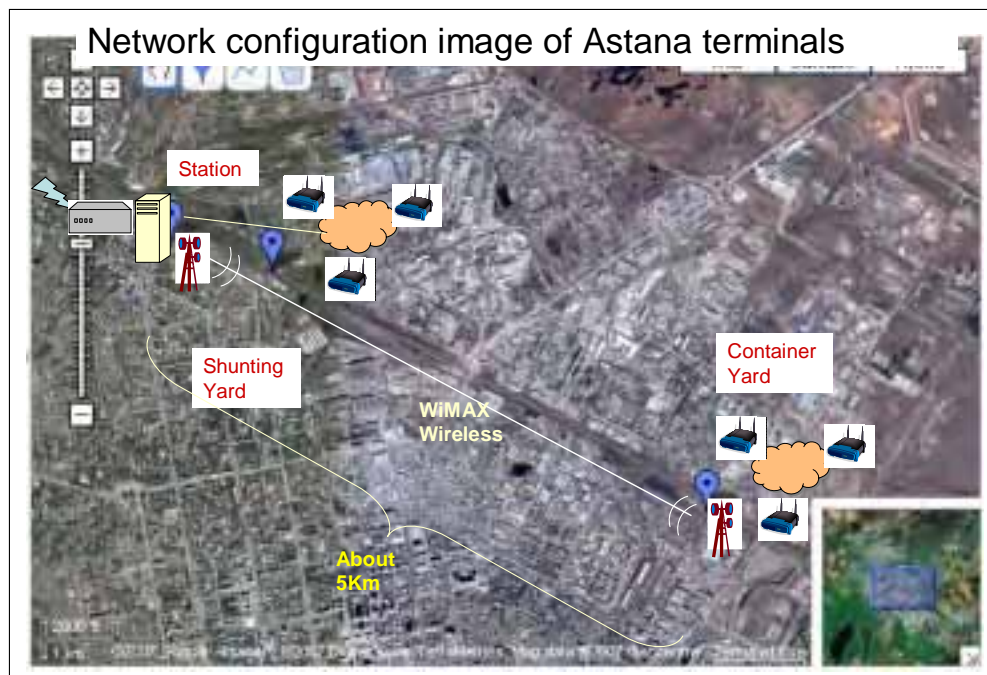


Figure 7.5-5 Network Image Concept of Astana terminal

(7) Software Development

Required functions are listed in Table 7.5-3 along with rough estimated development costs.

Table 7.5-3 Functions Requiring Software Development

Category	Function	Description	Users
Web Systems			
1	User profile maintenance	Input and maintain user profiles. Users include internal users, forwarders, consignees, consignors approved.	Internal users/general users(partially)
2	User profile inquiry	Inquiry of user profile by administrator or by all users for their own.	Internal users /general users(partially)
3	Password change	Password change function by users themselves	All users
4	Train schedule inquiry	Inquire train schedule with its basic capacity	All users
5	Train schedule loading	Train schedule managed by ACTOM is transmitted and loaded to Web system	-
6	Container loading reservation	Users can reserve the seats for containers. Directly reserve the scheduled train or request expected arrival date & time.	All users
7	Inquiry of reserved container sheet	Users can confirm the situation of reservation of the seats for containers.	All users
8	Inquiry container location	Users can inquire the location of their own containers.	All users
9	Inquiry containers by train, destination, consignee, etc		Internal users
10	Containers arriving by station	Each station can inquire arriving containers	Internal users
11	Scheduled container loading/unloading by station by train	Each station can inquire necessary work for containers	Internal users
12	Shipping Document loading	Shipping Document managed by ACTOM is transmitted and loaded to Web system	-
13	Shipping document inquiry	Shipping Document can be revised. Not only by BL number but by wagon number or container code.	Internal users
14	Train make-up information loading	Train make-up information managed by ACTOM is transmitted and loaded to Web system	-
15	Train arrival/departure loading	Train arrival/departure information managed by ACTOM is transmitted and loaded to Web system	-
	Number of function		75
PDA systems			
16	Work Order Shunting	Based on arrival train information, instruct how to shunt the train	Yard operator
17	Work Order Loading/Unloading	Based on arrival train information, instruct how to shunt the train	Yard operator
18	Work Order make-up	Based on make-up information by the office.	Yard operator
19	Register work completion	Entry on W/O when work completed.	Yard operator
	Number of function		20
Data transmission between ACTOM and terminals			
20	Train schedule		
21	Train arrival/departure		
22	Shipping documents		
	Number of function		15
Data exchange system			
23	Receiving data	Shipping Document, Arrival Train Information	
24	Sending data	Shipping Document, Departure Train Information	
	Number of function		10
	Total Function		120
	Design + Development		1,200 KUS\$ (10KUS\$/function)
	Test + Implementation		240 KUS\$

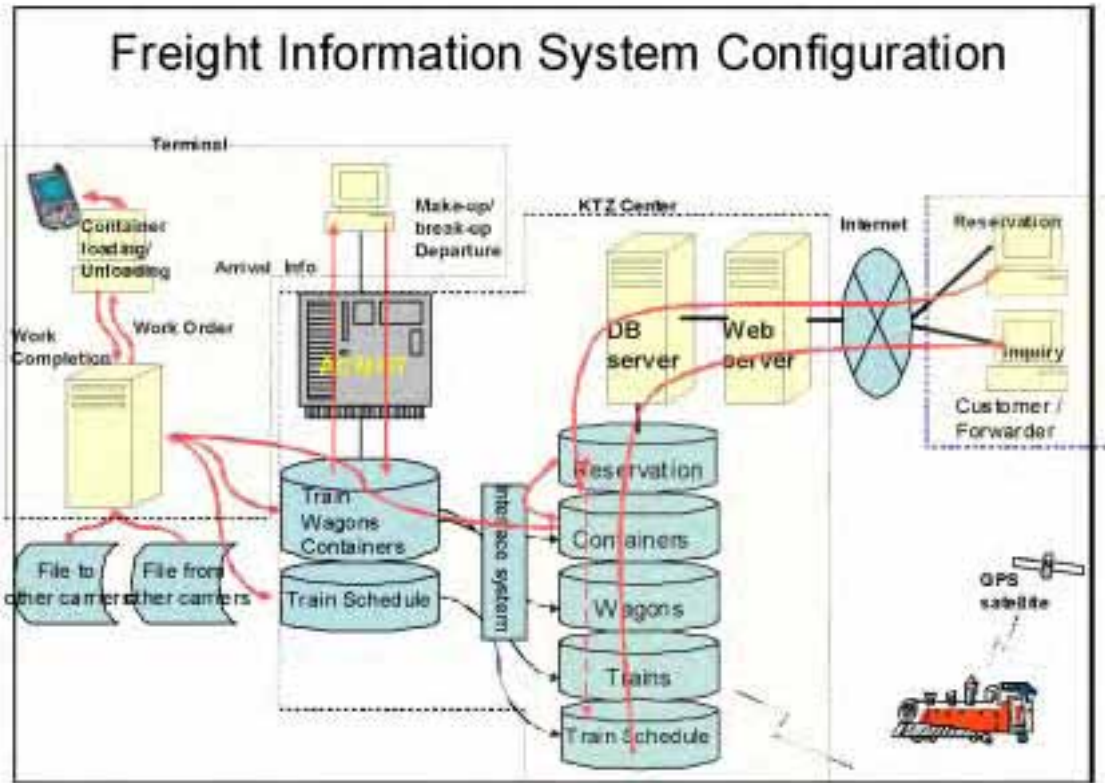


Figure 7.5-6 Information System Configuration

(8) Phased approach

It is impractical to develop and implement all of the necessary systems at once. Therefore, phased implementation must be considered. Proposed phases are shown in Table 7.5-4.

Table 7.5-4 Proposed Schedule

	2007	2008	2009	2010	2011	2012	2013
Container Freight Information System							
Web Application Development							
Tracing system			Design	Devel.			
Reservation		Design	Devel.				
Data exchange system							
Terminal Server system		Design	Devel.				
Implementation RFID/GPS etc							
				Ph-II			
ICT infrastrucure for Terminals							
Dostyk							
Aktau							
Integrated Terminals							
Regional Terminals							
Others							
Future systems planning							
Technology/standardization Study							

(9) Investment

Rough investment amounts added are summarized in Table 7.5-5.

Table 7.5-5 Investment Summary

Category	Description	Cost amount ('000US\$)
Hardware/network in terminals	See detail in table 8.6.2-2	3,303
Software development	See detail in table 8.6.2-3	1,440
Central hardware	Web servers (*4) and database servers (*2)	300
Modification and add-ons to the ACTOM	Rough estimate	500
Total		5,543

For Ph-II, assuming that all locomotives will have equipment to send their locations and all of the wagons and containers will have RFID equipment, the estimated cost is as follows.

US\$ 500 * 1,700 locomotives = US\$ 0.85 mil.

US\$ 3 * (75,000 wagons + 75,000 containers) = US\$0.45 mil.

US\$500 * 1,000 RFID reading handy terminals = US\$ 0.5 mil.

US\$50,000 * 16 servers = US\$0.8 mil.

Software development = US\$ 2 mil.

Total US\$4.6 mil.

(10) Issues and Future Considerations

- a. Implementation of GPS, other location tracing systems, FRID or other unit identification systems are considered in Ph-II. Up to then, study of these technical trends as well as standardization should be carried out.
- b. Further study of coordination of data exchange with third parties in terms of types of data, transmission protocol, timing, etc. is also required to establish or join EDI, cooperating with related organizations like customs, and forwarders in Kazakhstan as well as in foreign countries.
- c. Regional (by terminal) ICT operating organizations and KTZ's central ICT corporations should cooperate. ICT responsible organizations or persons in related companies like KTS or KedenTransService should also cooperate.
- d. Minimum ICT training is necessary to operate the terminals , maintain their ICT equipment and implement central operation management systems.

User training for prompt use of new ICT equipment for field operations should be standardized and carried out efficiently.

7.6 Institutional and Human Resource Development Plan

7.6.1 Background of Institutional and Human Resource Development

Logistics are important in Kazakhstan. Transit or west-east transport is recognized as one of the priorities in government plans or strategies. Logistics is one of the important industries to be promoted by the government. However, knowledge, administrative institutions and business management concerning logistics in Kazakhstan have not reached the same advanced level as elsewhere in the world. Very little “Just-in-Time”⁴ system or “Supply Chain Management”⁵ appear to be carried out in Kazakhstan. It is certain that these advanced logistics systems meet advanced needs of people, business and technological environment. However, the globalization of the economy and technology is progressing rapidly and Kazakhstan needs to prepare for that too.

In order to improve the level of logistics in Kazakhstan, this section focuses on important areas of government institutional change and human resource development, although there are wide areas of logistics to be improved.

Institutional improvement focuses on coordination of government agencies and the private sector and PPP (Public Private Partnership) methods. Human resources development related to this improvement is also recommended.

7.6.2 Contents of Institutional and Human Resource Development Plan

(1) Institutional Development

There is no government organization specialized in and responsible for logistics in Kazakhstan. In addition, the vertical structure of the government seems too strong for close cooperation and coordination with logistics-related government organizations in policy and project formation. Although it is true that logistics ranges over wide areas of government jurisdiction from transport to industry and trade and the bureaucracy is inclined to cover its jurisdiction independently and eager to expand its coverage, avoidance of duplication and collaboration to improve logistics are necessary.

It would be necessary to establish a subdivision in charge of logistics promotion at least in the Ministry of Transport and Communications and the Ministry of Industry and Trade. The MTC is responsible for smooth transport and the MIT’s jurisdiction should cover domestic and international trade and the logistics-related industry. However, there are other related ministries such as customs, quarantine, security and health. The cooperation of these ministries could bring about smooth procedures such as single

⁴ “Just-in-Time” means making only “what is needed, when it is needed, and in the amount needed.” To efficiently produce a large number of products such as automobiles, which are made up of some 30,000 parts, it is necessary to create a detailed production plan that includes parts procurement, for example.

Supplying “what is needed, when it is needed, and in the amount needed” according to this production plan can eliminate waste, inconsistencies, and unreasonable requirements, resulting in improved productivity.

(http://www.toyota.co.jp/en/vision/production_system/just.html)

⁵ Supply chain management (SCM) is the oversight of materials, information, and finances as they move in a process from supplier to manufacturer to wholesaler to retailer to consumer. Supply chain management involves coordinating and integrating these flows both within and among companies. It is said that the ultimate goal of any effective supply chain management system is to reduce inventory (with the assumption that products are available when needed).

(http://searchcio.techtarget.com/sDefinition/0,,sid19_gc214546,00.html)

window or one-stop systems. Close cooperation between the MTC and MIT may strengthen SEZ development. Therefore, some kind of coordinating organization for logistics in the government like the “Comprehensive Logistics Policy Promotion Association” in Japan is necessary. This Association enabled i) the Government of Japan to prepare integrated logistics policies and ii) each logistics-related ministry or agency to set targets, plan measures and implement them in its jurisdiction each year. In order to promote logistics improvement in Kazakhstan, related government agencies should declare their annual targets, report their accomplishments in their jurisdictions and discuss common policies and projects periodically, with ad hoc meetings held on the basis of urgent and temporary needs.

As far as logistics is concerned, it is also necessary to coordinate with local governments. In addition, cooperation with private companies or logistics businesses should be promoted through organizing an association and meetings.

(2) PPP policies

The Transport Strategy till 2015 indicates PPP as follows.

“Participation of the private sector in different areas of the transport sector will be encouraged, including long-term concession agreements when the infrastructure eventually will be returned to the state. Schemes of state-private partnership can also include partial financing of the infrastructure by the state.”

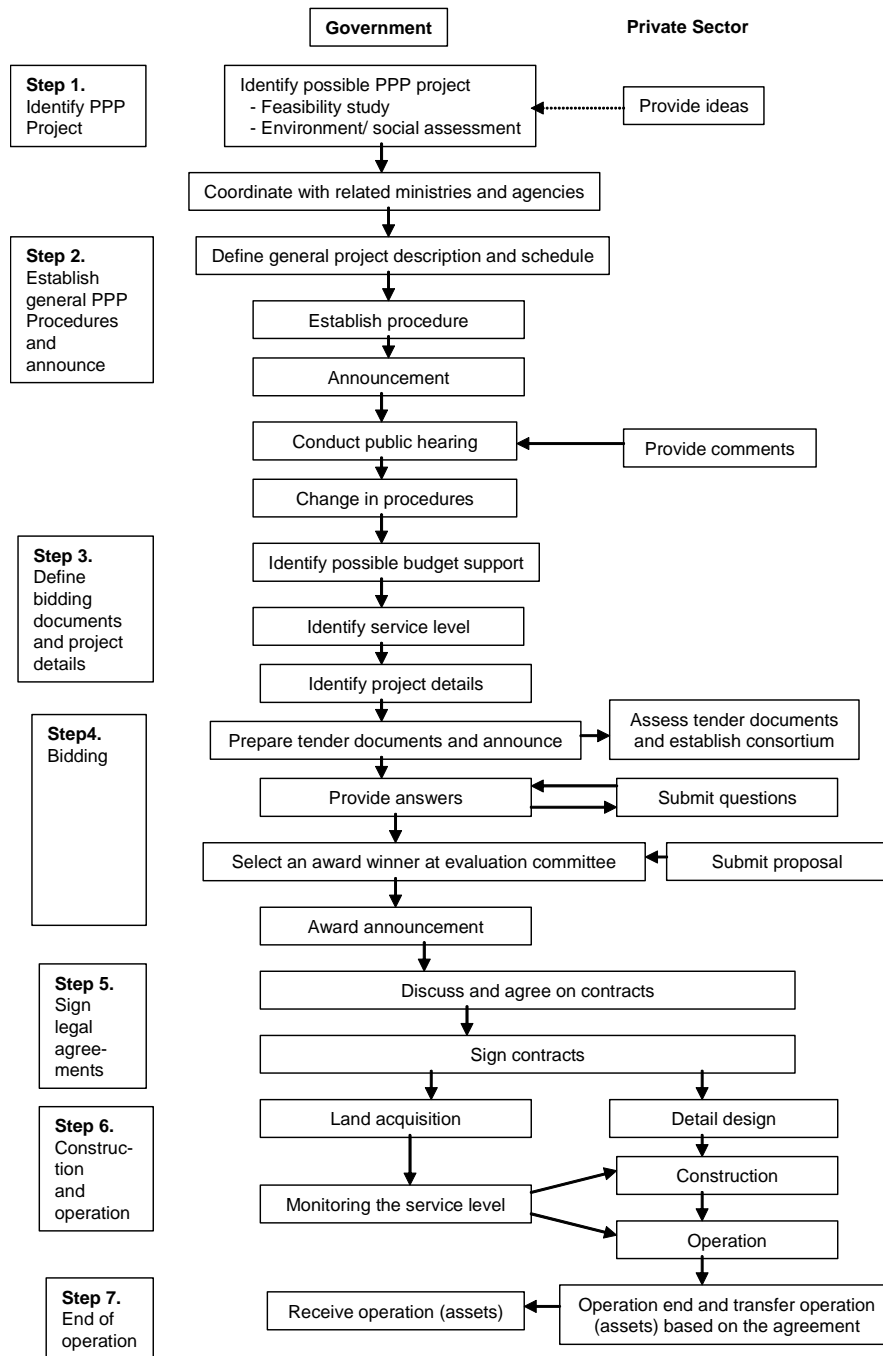
Actually, it has been decided that eleven railway construction and electrification projects are listed for medium-term concession. Furthermore, the concession for a railway logistics center projects has been given to a private company.

Privatization, BOT or concession have been popular because the public sector lacked a sufficient budget. The World Bank promoted this scheme for developing countries. However, without suitable government policies and implementation procedures, it can easily lead to a situation of shifting from a public monopoly to a private monopoly or failure of projects (cancellation, lawsuits, etc.). For instance, there are several private sector port development projects in developing countries, but those ports are often monopolized by several worldwide port terminal operators.

The standard PPP process is shown in Figure 7.6-1. The process can be modified depending on the environment and situation of the country. The government of Japan is somewhat cautious about adopting PFI (Private Finance Initiative) and seems to consider proposal contents and applicant qualifications more important than bid money. However, the following principles should be maintained.

- **Transparency**

A transparent legal framework is necessary and implementation should be based on that framework.



Source: JICA, “Public-private Partnership (PPP) Program for Cairo Urban Toll Expressway Network Development” 2006

Figure 7.6-1 Standard PPP Process

- Fairness
Selection of award winner and selection of criteria should be fair and unbiased.
- Risk sharing
Project risks should be shared appropriately by the public and private sectors so that the project can be completed successfully without cancellation or suspension.
PPP methods should be used to promote competition, but if the project is a monopoly type operation, tariffs should be negotiated with the government in order to keep them appropriate.

In Kazakhstan, PPP started recently and there are not enough cases yet. However, some cases such as railway terminals did not seem to show enough transparency and fairness. In addition, private companies in PPP should be competitive enough to do business in Kazakhstan. It will be necessary to evaluate PPP policy implementation in the future as PPP progresses.

There is a typical method for setting tariffs as follows.

Tariff increase rate = CPI minus alpha

CPI: Consumer Price Index

Alpha: productivity rate target

The government and the concessionaire negotiate the tariff increase, which can be decided by the consumer price index (inflation rate) minus target productivity rate. The concessionaire needs to make efforts to increase productivity in order to maintain profits.

(3) Human Resource Development (Capacity Building)

Since logistics is a new concept in Kazakhstan and it is progressing with sophisticated technology such as RFID, human resource development for logistics in Kazakhstan is essential. Not only government officials and public corporation employers and employees, but also private enterprise people in Kazakhstan need to catch up with state-of-the-art logistics. In particular, the enterprises should be competitive in the worldwide market and logistics is one of the important elements for achieving competitiveness. The government has to supply necessary logistics infrastructure and services for enterprise activities. Even ordinary citizens need smooth, stable, reliable and cheap logistics for daily living.

Thus, logistics-related government officials including those in public corporations need to be trained for not only modern logistics technology and services but also institutional systems. Training for logistics should be within the responsibility of enterprise or business people, but the government can support or assist the training activities of business associations and chambers of commerce and industry.

In particular, the Ministry of Transport and Communications and the Ministry of Industry and Trade must promote logistics businesses and related enterprises, namely forwarders, consolidators and carriers (and 3PL: 3rd Party Logistics⁶ in the future).

⁶3PL is an outsourcing service undertaking the logistics functions of companies as a whole. A 3PL company which does not handle a physical distribution business by itself contracts a customer's business such as distribution and inventory management, including planning and system establishment, in bulk for a long time conducting the business with the use of outside logistics companies.

The CCC, Ministry of Finance, must promote customs brokerage businesses by issuing licenses for customs brokers and institutionalizing educational systems such as special schools and training courses and official examinations.

Possible training contents are as follows.

- Advanced logistics technology
- Supporting policies and strategies
- Best practice examples
- Study group formation to introduce logistics policies and technologies

Training courses should be given periodically and also on an ad hoc basis if necessary on occasions such as new system introduction.

Training is not limited to domestic courses and opportunities to visit advanced foreign countries should be taken.

Furthermore, universities and vocational colleges should have logistics (related) departments or courses and train logistics related specialists.

In addition, certified examination systems such as for customs brokers and forwarders could be considered.

CHAPTER 8 MARKETING PLAN FOR CONTAINER TRANSPORTATION AND REINFORCEMENT PLAN FOR TRANS-KAZAKHSTAN ROUTE

8.1 Marketing Plan for Container Transportation

8.1.1 Analysis on Current Conditions for More Efficient Marketing

In order to create a more efficient marketing plan for promoting more container transportation by rail, in-depth analyses of current conditions on issues and support needs relating to railway transportation on the part of the demand side (corporations, etc.) and the supply side (KTZ, KTS, etc.) must be thoroughly implemented. In particular, East Asian countries such as Japan, South Korea and China have recently expanded direct trade with Kazakhstan or transit trade passing through Kazakhstan. Therefore, intensive analyses are required for active marketing to these countries.

8.1.1.1 Current Condition of Logistics for Kazakhstan Route

One of the major export items from Japan and South Korea to Kazakhstan is used automobiles. One of the major export commodities from South Korea to Uzbekistan passing through Kazakhstan is auto assembly parts (CKD, etc.). Customers in these countries believe that more development of the railway transportation system in Kazakhstan to expand trade or transit trade is essential. As described in the comments below by economic bodies or corporations in Japan or Kazakhstan, more development of the efficient railway transportation system, by removing “soft” and “hard” constraints, is crucial. In particular, a more efficient rail transportation system with shorter transit times and stable and accurate transportation schedules on various routes (for example, Dostyk-Almaty-western Kazakhstan) should be established.

8.1.1.2 Issues of Railway Transportation based on Interviews

Issues concerning mainly rail-based logistics, brought up in interviews with corporations and business and industrial groups during the study, are detailed as follows. In particular, lack of stable and rapid rail transportation systems and marketing functions to cultivate domestic and foreign customers are mentioned out by many companies in various countries. (See Table 8.1.1 and details are described in Appendix 8.1.1-1)

(1) Demand Side: Corporations

The issues among corporations using rail transportation are major impediments to the expansion of trade with Kazakhstan and transit trade passing through Kazakhstan. In interviews with corporations it was mentioned that some corporations (shippers/consignees: especially, in Japan, South Korea, China and so forth) do not have enough knowledge of precise procedures for customs clearance. They lack know-how and experience of customs clearance procedures concerning cargo to and through Kazakhstan, and this is one of the major contributory factors to customs delays.

Interviews with corporations made it clear that marketing by KTZ or KTS to cultivate customers with container cargos is insufficient. For example, corporations in East Asian countries such as Japan, South Korea and China or countries neighboring Kazakhstan, such as Azerbaijan, are not familiar with actual conditions regarding rail transportation in Kazakhstan. As a result, those companies are unable to respond to numerous inquiries regarding transportation of goods from these countries to Kazakhstan or passing through Kazakhstan and they lose out on business chances).

Particularly in Kazakhstan, customers say that logistics marketing functions that remove constraints and support needs of customers for improved efficiency in rail transportation, or that cultivate new domestic or foreign customers, are insufficient. Specifically, marketing functions for cultivating not only domestic but also foreign customers and providing them with more useful information, which leads to more containerized imports, exports or transit cargos, are insufficient.

Table 8.1.1 Issues Mentioned by Corporations Concerning Mainly Rail-based Logistics

Issues	Description	Countries where this was mentioned
<ul style="list-style-type: none"> Lack of stable and rapid railway transportation system 	<ul style="list-style-type: none"> Lack of capacity in Dostyk 	Kazakhstan, China, Japan, South Korea, Iran
	<ul style="list-style-type: none"> Lack of efficient transportation system 	<ul style="list-style-type: none"> Lack of efficient (stable and faster) transportation system (e.g., no block train between Dostyk-Aktau)
<ul style="list-style-type: none"> Lack of more efficient marketing 	<ul style="list-style-type: none"> Lack of marketing, i.e. no positive approach to domestic and foreign customers to attract more cargos and give them useful information 	Japan, South Korea, China and Azerbaijan
<ul style="list-style-type: none"> Lack of efficient procedures for customs clearance 	<ul style="list-style-type: none"> Customs clearance delays 	Kazakhstan, China, Japan, South Korea
<ul style="list-style-type: none"> Lack of available containers in East Asia region 	<ul style="list-style-type: none"> Lack of available containers for Central Asia in East Asia region 	Japan, South Korea, Iran
<ul style="list-style-type: none"> Lack of platforms (at Lianyungang, China, etc.) 	<ul style="list-style-type: none"> Lack of platforms available to CLB 	China, Japan, South Korea, Iran

Note: Number of surveyed entities is described in Table 8.1.2.

Table 8.1.2 Number of Surveyed Entities (74 economic groups and corporations)

Country	Business Groups/Industrial Groups	Corporations	Total
Kazakhstan	7	23	30
China	1	8	9
Azerbaijan	8 (5)	11 (6)	19 (11)
Iran	(3)	(9)	(12)
Japan	1	3	4
Total	20 (8)	54 (15)	74 (23)

Note: The number of Korean companies interviewed in Kazakhstan is included in the numbers for Kazakhstan. Figures in parentheses indicate surveys implemented by local consultants.

8.1.2 Measures to Improve Marketing Functions (Soft Issues)

(1) Basic direction of marketing to cultivate customers with container cargo

Since the main current export items in Kazakhstan are mineral resources and products processed from mineral resources carried in tank or bulk wagons in Kazakhstan, it may be difficult to increase the volume of container cargo exports in the short term. Current major items, which contribute to an increase of container transportation, are import items such as manufactured products, such as electrical appliances and machine tools, consumer goods and vehicles. In addition, the volume of transit container cargos passing through Kazakhstan is not large.

Under these circumstances, the following measures should be implemented in order to make more profits through transportation of more container cargos:

- (a) Attract more import container cargos from foreign countries such as East Asian countries (Japan, South Korea, China and so forth) with potential container cargos in the short term (in the long run, industrial diversification in Kazakhstan will be required to attract more export container cargos), and
- (b) Attract more transit container cargos passing through Kazakhstan

For those aims, a more efficient system of marketing (“soft” issues) as well as more efficient arrangement of the rail transportation infrastructure (“hard” issues) to pursue (a) and (b) must be implemented. The following describes how marketing functions in terms of soft issues must be improved.

(2) Analysis of Marketing Functions

In order to increase the cargo volume of containers transported in bilateral trade with Kazakhstan or transit trade passing through Kazakhstan in pursuit of more profits, it is very important to establish a more efficient marketing system to collect and analyze needed information and implement it efficiently. Moreover, it is also very important to establish a system to review the outcomes after more efficient marketing. In general, with regard to logistics marketing in railway transportation, the following functions in terms of information collection, analysis and implementation must be considered in pursuit of more efficient marketing.

The conceptual diagram of effective marketing is illustrated in Figure 8.1-1.

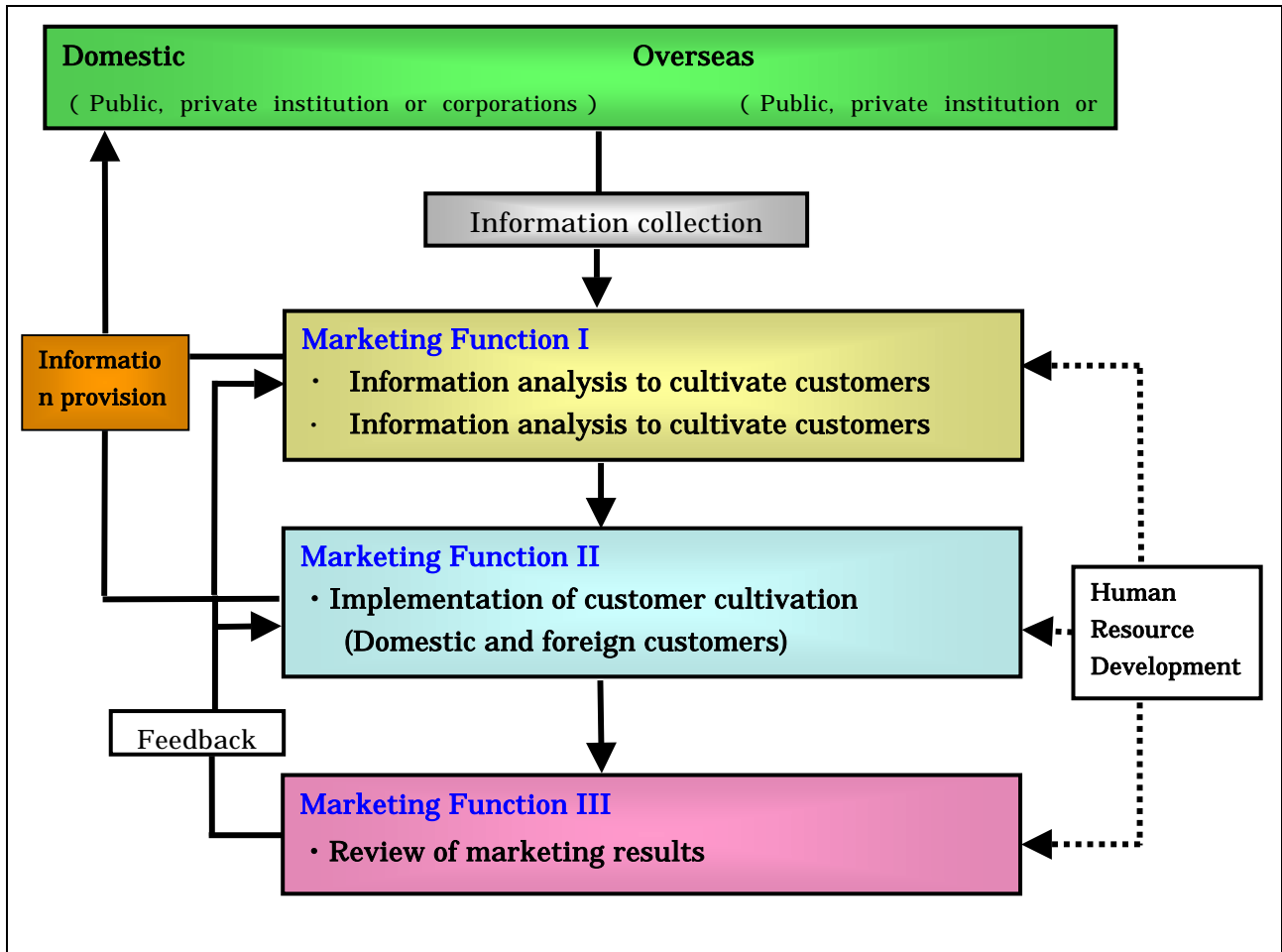


Figure 8.1-1 Conceptual Flow Chart for Efficient Marketing

1) Information (macro and micro) to cultivate customers

- Macro information: macroeconomic data such as current and future prospects for bilateral trade, transit trade passing through Kazakhstan and so forth
- Micro information: profiles of current and potential customers, including items, quantities, origins/destinations, transportation modes, issues and support needs and so forth
- Other information: activities of the governments in other countries, including analyses of competitive routes in other countries

2) Information analysis to cultivate customers

- Efficient analysis of marketing information
 - (Quantitative analysis: issues which can be analyzed numerically, e.g., number of transported containers, revenues and so forth)
 - (Qualitative analysis: profiles of shippers and consignees, constraints experienced, support needs)
- Systems for sharing analyzed information with concerned parties efficiently

3) Implementation of marketing to cultivate customers

- An efficient function to cultivation of domestic customers (including efficient provision of useful information, efficient systems to feed useful information obtained from them back to concerned parties and so forth)

- An efficient function to cultivation of foreign customers (including efficient provision of useful information, efficient systems to feed useful information obtained from them back to concerned parties and so forth)

4) Review of Marketing Results

Management cycle in marketing, i.e., information collection and analysis - implementation of marketing – a review of activities

5) Human resource development function

- Human resource development system for efficient marketing (information collection and analysis in marketing – implementation of marketing and so forth)

In pursuit of more efficient marketing, first, the current conditions regarding items 1)-4) above must be analyzed and secondly, actions to pursue more efficiency must be designed and implemented. Current marketing function¹ status at KTZ and KTS taking responsibility for marketing of container cargos and actions to be taken in the future are summarized in Table 8.1.3.

Although positive marketing activities by KTZ and KTS have already been implemented, more marketing to foreign customers in addition to current customers must be intensively implemented in light of information collection and analysis for marketing and efficient marketing implementation. For that purpose, continuous human resource development in marketing is also required.

(3) Draft Concept of Schedule and Items to Strengthen Marketing Functions

Time schedule and items of action plans to be strengthened in pursuit of more efficient marketing functions (Table 8.1-4) is described accordingly. Details of the action plan to establish more efficient marketing are described in Appendix 8.1.2(1).

¹ Basically, KTZ has taken responsibilities for creating marketing strategies or polices, mainly based on information obtained from KTS. KTS has taken responsibility for implementation of marketing in line with strategies or policies. However, KTZ has works to attract customers (e.g. participation in international exhibitions). (Details of current conditions; structure and marketing functions, at KTZ or KTS are described in the Appendix table 8.1.2-1.)

Table 8.1-3 Draft Concept of Schedule and Items to Strengthen Marketing Functions

Function	Classification/description	Current status (Strengths and weaknesses)	Actions to be taken
1. Information Collection	<p>Information items to be collected are clearly defined. (For example, macro data: current condition of bilateral trade and transit trade; micro data: profiles of corporations including items/quantity, transportation routes/modes, and condition of railway transportation in other countries, etc.)</p> <p>Sources of information to be collected (e.g., from which areas and countries information must be collected, etc.) are clearly clarified.</p>	<p>For marketing, basic macro information to be collected (for example, economic indicators such as economic growth rate and GDP) is basically defined. However, other essential concrete information to be collected (both macro information such as condition of foreign trade or development status of other countries' transportation systems, and micro information like profiles of foreign corporations including their future trade volumes, transportation modes, origins/destinations, constraints and support needs) is not defined completely.</p>	<p>Items and contents of information leading to more efficient evaluation of customers to be collected at the macro and micro levels must be clearly defined.</p>
1.1 Information definition	<p>A department or section-in-charge for information collection is clearly defined.</p> <p>Methods of information collection are clearly defined.</p>	<p>Major institutions collecting information for marketing are KTZ and KTS, but there is not enough staff for marketing to collect information in detail.</p> <p>Information collection from domestic or foreign direct customers with container cargo for trade or transit trade passing through Kazakhstan is not well implemented to increase cargo handled. This is mainly due to insufficient diversification of information sources to collect the necessary information in addition to the insufficient number of staff. In particular, supply sources for collecting information tend to be restricted.</p> <p>For example, various working groups such as forwarding companies are organized as one of the main supply sources to collect information in Kazakhstan and foreign countries. However, concrete information for implementing marketing, such as future cargo prospects of specific customers, has not been obtained efficiently. Another example in Kazakhstan is that there are not enough studies on competing or complementary routes such as SLB and CLB, rail transportation development plans of other countries and other competing transportation modes such as truck.</p> <p>Procedures to collect necessary information including timing/frequency of information collection are not clearly defined.</p>	<p>More staff members are needed to collect information.</p> <p>In addition to domestic information collection, in particular, (a) diversifying supply sources of necessary information and (b) implementing continuous information collection on defined items of targeting countries, areas, industries, and corporations, must be established.</p> <p>Closer relationships with relevant foreign institutions such as China Railways, which influence activities in marketing, are required.</p> <p>Procedures to collect the necessary information, including timing/frequency of information collection, must be clearly defined.</p>
1.2 Information collection	<p>Procedures to process information are clearly defined.</p> <p>In particular, procedures to create a database of information obtained are clearly defined.</p>	<p>It takes a long time to create a database of information collected, due to the different formats used by information sources and limited computer capacity. (Some data are sent by e-mail and others are sent by fax.)</p> <p>A system to trace customers' information (names of customers, commodity names and volumes, origin/destination, etc.) on a time series (quarterly or yearly) is not well established.</p>	<p>More staff members are needed for information processing.</p> <p>A system for tracing customers' information (names of customers, commodity names/volumes, origin/destination, etc.) on a time series (quarterly or yearly) must be well established.</p>
1.3 Information processing	<p>There are sufficient human resources to deal with information collection and processing for marketing.</p> <p>Continuous and well established training programs are implemented.</p>	<p>There are not enough human resource development programs for processing marketing data.</p>	<p>In addition to assigning more staff, staff capacity-building should be implemented in order to establish a database.</p>
1.4 Human resource development	<p>Procedures to review the activities (1.1-1.4) are established. (e.g., change in items to be collected and methods of information collection or organizational reform, etc.)</p> <p>The department or section in charge of information analysis is clearly defined.</p> <p>Methods of information analysis are clearly defined.</p>	<p>Major institutions collecting marketing information are KTZ and KTS, but there is not enough staff to analyze information in detail.</p> <p>Procedures to analyze data are mostly defined and reported monthly.</p>	<p>Procedures to evaluate activities must be improved.</p>
1.5 Review of information collection procedures	<p>Procedures to provide analyzed information are clearly established. (In particular, how to deliver analyzed results [including time/frequency of delivery] to the concerned parties is clearly established.)</p>	<p>There is no well-established information sharing system for analyzed information between staff in Astana or Almaty and those in other cities, especially in foreign countries.</p>	<p>Procedures to evaluate activities must be improved.</p>
2. Information Analysis	<p>The department or section in charge of information analysis is clearly defined.</p> <p>Methods of information analysis are clearly defined.</p>	<p>Tools or techniques (e.g., statistical analysis) of marketing staff are insufficient for analyzing macro and micro information.</p>	<p>More staff members are needed for information analysis.</p>
2.1 Information analysis	<p>Procedures to provide analyzed information are clearly established. (In particular, how to deliver analyzed results [including time/frequency of delivery] to the concerned parties is clearly established.)</p>	<p>Tools or techniques (e.g., statistical analysis) of marketing staff are insufficient for analyzing macro and micro information.</p>	<p>The information sharing system between staff in Astana or Almaty and others, especially in foreign countries, must be clearly defined.</p>
2.2 Information provision	<p>There are sufficient human resources to deal with processing data for marketing and information analysis.</p> <p>Continuous and well established training programs are implemented.</p>	<p>Capacity-building to upgrade statistical techniques to analyze data must be implemented.</p>	<p>Capacity-building to upgrade statistical techniques to analyze data must be implemented.</p>
2.3 Human resources development	<p>There are sufficient human resources to deal with processing data for marketing and information analysis.</p> <p>Continuous and well established training programs are implemented.</p>	<p>Capacity-building to upgrade statistical techniques to analyze data must be implemented.</p>	<p>Capacity-building to upgrade statistical techniques to analyze data must be implemented.</p>

Function	Classification/description	Current status (Strengths and weaknesses)	Actions to be taken
3. Implementati on	<p>2.4 Review of information analysis procedures</p> <p>3.1 Marketing policy</p> <p>3.2 Implementation marketing</p>	<p>-Procedures to review the activities (2.1 – 2.3) are established (e.g. change in items to be analyzed, methods of information analysis or organizational reform, etc.)</p> <p>- Marketing policies including an effective marketing plan in the short, intermediate and long run are clearly designed</p> <p>-The department or section in charge of marketing implementation is clearly defined.</p> <p>-Effective marketing procedures to cultivate customers, including supplying information to them, and establishment of close relationships with relevant domestic and foreign institutions (e.g. Chamber of Commerce) are established.</p>	<p>- Procedures to evaluate activities must be improved.</p> <p>-More concrete marketing strategies including marketing policy and action plans over the short/intermediate/long term must be pursued.</p> <p>- More staff (in particular, sales staff in charge of foreign customer development) are needed to implement marketing.</p> <p>-In addition to forwarders, a more direct approach to customers (companies) is needed.</p> <p>-More positive implementation of marketing for foreign customers with transit cargos or import cargos to Kazakhstan must be carried out. For that purpose, establishment of overseas branches in countries such as Japan, South Korea and China, or more visits to foreign countries to cultivate customers through various seminars, must be considered.</p> <p>-Moreover, cooperation with other institutions such as the Ministry of Industry and Trade must be considered.</p> <p>-Information provision must be improved.</p>
	<p>3.3 Human resources development</p> <p>3.4 Review of marketing implementation procedures</p>	<p>- There are sufficient human resources to implement marketing</p> <p>- Continuous and well established training programs are implemented</p> <p>-Procedures to review the activities (3.1 – 3.3) are established (e.g. change in targets, marketing methods, organizational reform or evaluations of staff in results of activities, etc.)</p>	<p>-Capacity-building to enhance marketing ability, in particular, ability to cultivate foreign customers, must be implemented.</p> <p>- Procedures to evaluate activities must be improved. In particular, assessment criteria for marketing performance of staff must be clearly defined.</p>
4 Functional integration	<p>4.1 Functional Integration</p>	<p>-The marketing management cycle (functions: information collection, processing, implementation and review of performance) is well maintained in order to pursue more efficient marketing.</p>	<p>-Regular review to assess the degree of efficiency in linkage between these functions must be implemented.</p>

Table 1-4 Draft: Concept of Schedule and Items to Strengthen Marketing Function

Items	First	Second	Third	4	5	6	7	8	9	10
1. Strengthening functions of marketing: information collection and										
1.1 Clarification of data items to be collected and analyzed (macro data: current conditions of bilateral trade and transit trade, micro data: profiles of goods including commodities, quantity, transportation routes and nodes.	↑	↑	↑							
1.2 Clarification of supply sources of informations and methods of information as well as an organizational arrangement of information	↑	↑	↑							
1.3 Clarification of methods of information analysis as well as an arrangement of information	↑	↑	↑							
1.4 Implementation of information collection and analysis of	↑	↑	↑							
1.5 Provision of data analysis to concerned divisions and	↑	↑	↑							
1.6 Review of activities (1.1-1.4) and implementation of further	↑	↑	↑							
2. Strengthening functions of implementation of marketing to cultivate more										
2.1 Establishment of more efficient marketing system (better structure and functions in domestic and foreign branches) to domestic and foreign customers (Note) In particular, it is necessary to strengthen marketing to cultivate foreign customers with import cargo containers to and transit cargo passing through (E.g. Establishment of overseas branches must be	↑	↑	↑							
2.2 Implementation of cultivation of domestic and foreign	↑	↑	↑							
2.3 Review of activities (2.1-2.2) and implementation of further	↑	↑	↑							
3. Strengthening function of information provision concerning marketing to customers										
3.1 Clarification of contents of information and tools (e.g. home page) to provide to	↑	↑	↑							
3.2 Establishment of information provision system and maintenance of contents of	↑	↑	↑							
3.3 Review of activities (3.1-3.2) and implementation of further	↑	↑	↑							
4. Implementation of training (marketing or IT related issues										
4.1 Identification of constraints or support needs of staff to arrange training	↑	↑	↑							
4.2 Training in marketing or IT related issues such as to strengthen or maintenance of data in home page etc	↑	↑	↑							
4.3 Review of activities (4.1-4.2) and implementation of further (Notice) Whether training programs are proper or not must be in order to upgrade them	↑	↑	↑							

After the fourth year, a comprehensive review in structure or marketing system must be done.

(Remarks) A term of "three years" should be set after fourth year, a wide range of review must be done in pursuit of more efficient.

8.1.3 Prospect of Import Cargo Volume between Dostyk and Aktau

(1) Analysis on Freight and Transit Time

In order to estimate a future cargo volume of containers if a block train is arranged between Dostyk and Aktau, firstly, a comparison between the blow two routes may be done in terms of transportation cost and transit time.

Box 8.1-1 Comparison of Two Main Routes

Two main routes:
a) East Asia: Japan, South Korea or China-Bandar Abbas-Aktau route (Main transportation mode: by sea.) Japan, South Korea or China-Bandar Abbas: by sea Bandar Abbas-Iran North port (e.g. Bandar Anzali port) : by truck Ports in northern Iran-Aktau: by sea
b) East Asia: Japan, South Korea or China-Lianyungang-Urumqi-Dostyk-Aktau route (Main transportation mode: by rail.) Japan, South Korea-Lianyungang: by sea Lianyungang-Urumqi-Dostyk-Aktau: by rail

If a block train is arranged between Dostyk and Aktau, the strengths and weaknesses of the above two routes must be carefully examined. (Note: Though various rates are offered as follows, these are based on interviews with companies. Therefore, there may be different on-going rates.)

Table 8.1-5 Comparison of Freight Transportation and Transit Time If A Block Train between Dostyk and Aktau is Arranged (Standard 40-foot Container Estimate)

Routes (Origin-Destination)	Mode of Transportation	Freight index	Transit time to Aktau (Theoretical days)
Japan-Almaty-Aktau	Block train formation	124	16 days
	Non block train formation	124	21 days
	Transportation mainly by sea	100	39 days
S. Korea-Almaty-Aktau	Block train formation	108	16 days
	Non block train formation	108	21 days
	Transportation mainly by sea	100	39 days

Note: 1) Freight index: if freight transportation mainly by sea from Japan or South Korea to Aktau via Bandar Abbas is equal to 100, the index of freight transportation mainly by rail from Japan to Aktau via Dostyk is 124. (Freight is not the actual cost of carriers to transport, but the amount that a customer needs to pay for transportation.)

2) Transit time: it is assumed that block train formation from Dostyk to Aktau shortens transit time by 5 days.

3) It is assumed that it takes 7 days from Lianyungang to Dostyk and 1 day to reload containers in Lianyungang and that it takes 4 days from Dostyk to Aktau and 1 day to reload them in Dostyk.

4) Rates by rail are simply calculated by adding current on-going market freight from each point of origin to Almaty to tariffs of rail transportation between Almaty and Aktau. In addition, empty container positioning cost to the place of loading after delivery to the destination is also taken into consideration in freight

(2) Prospect for Cargo Volume in Case of Block Train Formation between Dostyk and Aktau

Under current conditions, it is very difficult to estimate the container cargo volume if a block train between Dostyk and Aktau is arranged. If a block train composed of 50 platforms is arranged every week between Dostyk and Aktau transporting from East Asian countries such as Japan, South Korea and China, the total volume to be transported per year would be 5,200TEUs (433 TEUs per month). This represents 8.69% of the actual cargo volume (59,805TEUs) passing through Dostyk to the west in 2005. In a similar way, several estimations are calculated in Table 8.1-6.

Table 8.1-6 Estimated Volume in Case of Block Train Formation between Dostyk and Aktau

Frequency of block train formation (times per week)	Total volume per year (TEU)	Share of cargo volume passing through Dostyk to the west (%)			
		59,805 TEU (actual 2005)	70,000TEU (assumption)	80,000TEU (assumption)	90,000TEU (assumption)
0.5	2,600	4.35	3.71	3.25	2.89
1.0	5,200	8.69	7.43	6.50	5.78
1.5	7,800	13.04	11.14	9.75	8.67
2.0	10,400	17.39	14.86	13.00	11.56
2.5	13,000	21.74	18.57	16.25	14.44
3.0	15,600	26.08	22.29	19.50	17.33

Assumption: one year= 52 weeks, one train= 50 cars (100TEUs)

e.g., 3 times per week x 52weeks x 100TEUs = 15,600TEUs

As described in Chapter 3.3.1., recent investment in construction of oil and gas extraction plants has enormously increased in the Mangystau region facing the Caspian Sea. Especially in 2004, investment in the mining industry reached US\$5,245 million (63.4% of all investment in 2004). Investment from 2001 to 2004 dramatically increased by 60%. Commodities such as construction materials, cement and industrial plant products passing through Dostyk from East Asian countries such as Japan, South Korea and China to the west will make it possible to supply materials or equipment for oil or gas plants in the western area (Aktau, Atyrau, etc.) of Kazakhstan.

Assuming that the supply source share of construction materials, cement and industrial plant materials in total foreign direct investment in the mining sector (US\$5,425 million) of Kazakhstan is replaced by East Asian countries instead of Europe and the USA, the results of a simulation are shown in Table 8.1-7.

Table 8.1-7 Estimation Results

Share (%) of total foreign investment in the mining industry (US\$5,245million)	1.0%	3.0%	5.0%	10.0%	15.0%
Number of containers from East Asian Countries to Aktau via Dostyk (40-foot size)	483	1,450	2,417	4,835	7,252
(TEU base)	967	2,901	4,835	9,670	14,505
Ratio (%) to 60,000 TEUs (the total number of containers passing through Dostyk to the west: forecast for 2006)	1.61	4.83	8.06	16.12	24.17
Frequency of block train formation per month	0.81	2.42	4.03	8.06	12.09

Note: Construction materials, cement and industrial plant materials: if transported from East Asian countries such as Japan, South Korea and China to the western area of Kazakhstan.

As shown in Table 8.1-5, in addition to construction materials, cement and industrial plant products, other commodities such as motor vehicles, foodstuffs, textiles, machines and electric appliances which can be placed in containers are imported mainly to Almaty via Dostyk, Kazakhstan. Therefore, the possibility of transporting these commodities by block train to the western area of Kazakhstan must be carefully examined.

8.1.4 Target Area for Trans-Kazakhstan Route

8.1.4.1 Definition of Route

Regarding to the definition of route, it was already described in 4.2.1 of Chapter 4. However, definition of the route is briefly described in this paragraph for reference to understand this section more clearly.

- Trans-Asia Route: Chinese coastal sea port (primarily Lianyungang) – Dostyk – Petropavlovsk – Russia – Europe. The route is also known as China Land Bridge Route.
- Trans-Siberian Route: Vostochny – Karymskaya – Uranude – Novsibirsk – Ekaterinburg – Moscow – Europe. The route is also known as Siberia Land Bridge Route.
- TRACECA Route: Transport corridor in Europe, Caucasus, and Central Asia without any influences by Russian Federation.
 - TRACECA Turkmen Route: Dostyk – Trukmenbashy - Caspian Sea – Azerbaijan – Georgia - Europe
 - TRACECA Aktau Route: Dostyk – Aktau - Caspian Sea – Azerbaijan – Georgia – Europe
 - TRACECA Uzbek Route: Dostyk – Almaty - Tashkent – Aktau – Caspian Sea – Azerbaijan - Georgia – Europe
 - TRACECA Sarakhs Route: Dostyk – Almaty - Tashkent – Tashkent– Sarakhs– Tehran

Among these routes, TRACECA Turkmen Route is a principal route.

- North-South Route: Bandar Abbas (Iran) – Tehran – Baku – Astrahan – Moscow
- All-water Route: East Asia to various destinations (Europe, Russia, Iran and Caucasus) by water transportation.

In addition, Trans-Kazakhstan route is defined as Trans-Asian Route, TRACECA Aktau Route, and North South route in this study.

8.1.4.2 Analysis of Competing Routes

Figure 8.1-2 shows the analyzed results of competing routes between origin (O) and destination (D) of the countries/regions.

According to this figure, they can be classified into three (3) types:

- The Trans-Kazakhstan route is comparatively advantageous among the competing routes (advantage area)

- The Trans-Kazakhstan route is competing with some other routes (competing area)
- The Trans-Kazakhstan route is comparatively poor among the competing routes (no potential area)

These three categories are broken down into OD using the Trans-Kazakhstan route as follows;

1) OD where the Trans-Kazakhstan route has an advantage

- China (inland areas)- Western Europe, Eastern Europe and Russia
- Japan/Korea, China (coastal and inland areas)-Central Asia

2) OD where the Trans-Kazakhstan route is competitive with other routes

- Japan/Korea-the Caucasus
- China (coastal areas)-Eastern Europe, Russia, Iran and the Caucasus
- China (inland areas)-Iran and the Caucasus
- Iran – Russia

3) The Trans-Kazakhstan route has no potential

- Japan-Western Europe, Eastern Europe, Russia, Iran
- China (coastal)-Western Europe

	Japan / Korea	China (Coastal)	China (Inland)	West Europe	East Europe	Russia	Iran	Caucasus	Central Asia
Japan / Korea	NA	NA	NA	Water	Water	T-Siberian	Water	T-Aktau T-Turkmen	TRACECA
China (Coastal)		NA	NA	Water	Water, T-Asian T-Siberian	T-Asian T-Siberian	Water, T-Aktau T-Sarakhs	T-Aktau T-Turkmen	TRACECA
China (Inland)			NA	Water T-Asian	T-Asian	T-Asian	T-Aktau T-Sarakhs	T-Aktau T-Turkmen	TRACECA
West Europe				NA	NA	NA	NA	NA	NA
East Europe					NA	NA	NA	NA	NA
Russia						NA	Aktau, Astrakhan	NA	NA

- Notes:1) advantage area, competing area little potential area
- 2) Water: All water route, T-Asian: Trans-Asian Route, T-Siberian: Trans-Siberian Route
- 3) T-Aktau: TRACECA Aktau Route, T-Sarakhs: TRACECA Sarakh Route, T-Turkmen: TRACECA Turkmen Route,
- 4) NS Aktau- North South Aktau Route, NS Astrakhan Route: North South Astrakhan Route
- 5) NA indicates that the trans-Kazakhstan route has no potential for the applicable OD.

Figure 8.1-2 Results of Competing Routes between Countries/Regions for Trans-Kazakhstan Route

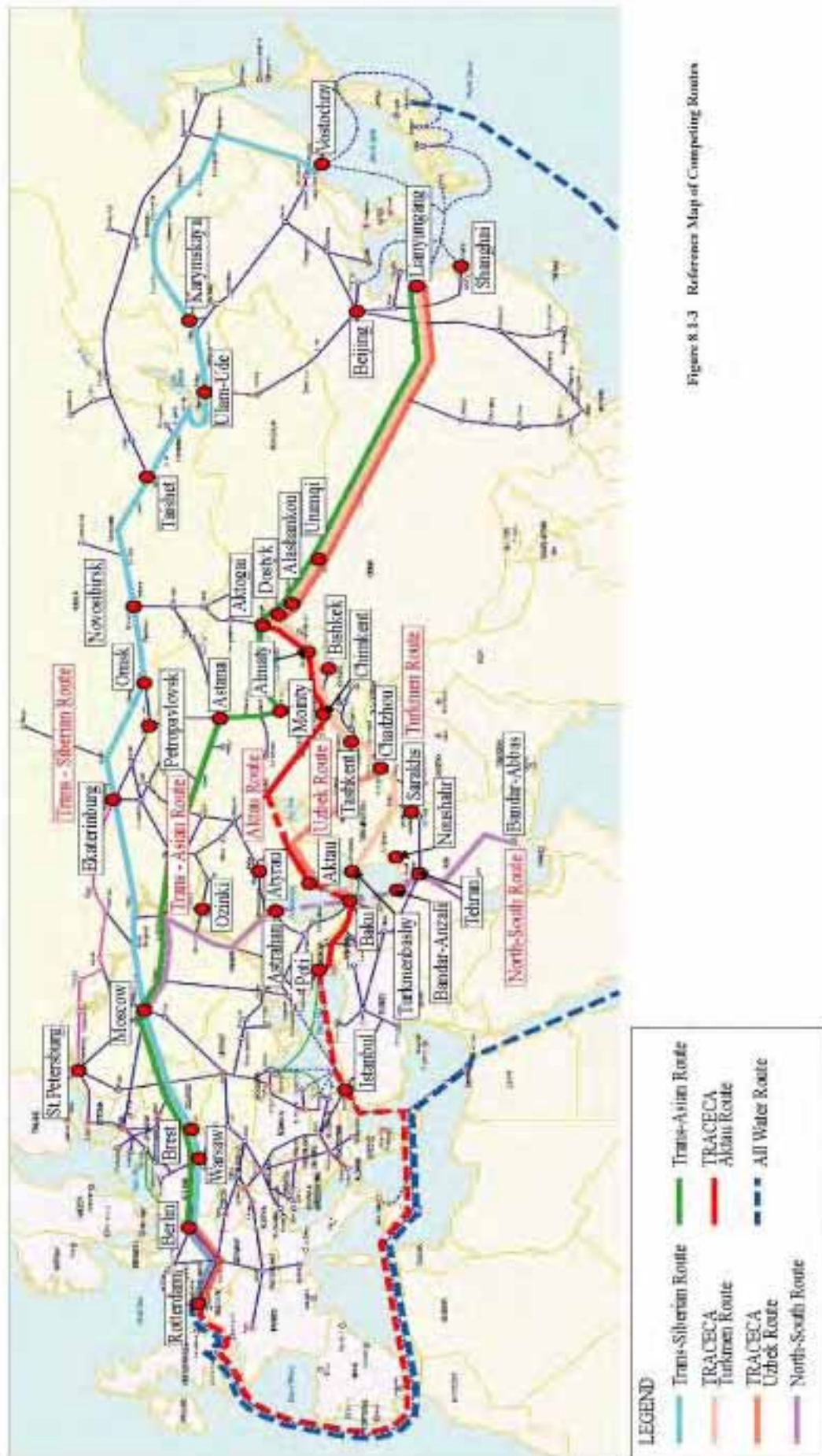


Figure 8.1.3 Reference Map of Competing Routes

8.1.4.3 Target ODs for Transit Trade

Based on the analysis of competition and transit trade, transit trade for the target area is shown in Tables 8.1-8 (1), (2), (3) and (4).

Table 8.2-1 (1) shows transit trade between East Asia and Europe or Russia.

In this corridor, the total transit trade influencing Trans-Kazakhstan Route is about US\$48.4 billion, of which the share for the all water route or the Trans-Siberian route is about 98% while that of the Trans-Kazakhstan Route is only the remaining 2%. This is because the advantage areas are few and Trans-Kazakhstan has very weak competitiveness.

Table 8.1-8 (1) Transit Trade for Target Areas for the Trans-Kazakhstan Route between East Asia and Europe or Russia in 2006

(Unit: US\$ million)

		Total Trade	Trans-Asian Route	Trans-Siberian Route / All Water Route
China (Inland)	- Western Europe	4,053	81	3,972
China (Inland)	- Eastern Europe	281	281	0
China (Inland)	- Russia	310	310	0
China (Coastal)	- Eastern Europe	20,825	208	20,617
China (Coastal)	- Russia	22,902	229	22,673
China	- Eastern Europe	21,106	489	20,617
China	- Russia	23,212	539	22,673
Total		48,372 100%	1,110 2.3%	47,262 97.7%

Source: JICA Study Team

Note: 1) Share of Trans-Kazakhstan Route between China (Coastal Areas) and East Europe and Russia is assumed to be 1%.

2) Share of Trans-Kazakhstan Route between China (Inland Areas) and West Europe is assumed to be about 2%.

Table 8.2-1 (2) shows the transit trade between East Asia and Iran.

In this corridor, total transit trade influencing Trans-Kazakhstan is about US\$4.5 billion, of which share on the Sarakhs route is about 17% while that of the Aktau route is only the remaining 4%. This is because the competitive situation of the Aktau route is very weak.

Table 8.1-8 (2) Transit Trade for Target Areas of Trans-Kazakhstan Route between East Asia and Iran in 2006

(Unit: US\$ Million)

			Total Trade	TRACECA Aktau Route	TRACECA Sarakhs Route	All Water
China (Coastal)	-	Iran	4,404	176	705	3,523
China (Inland)	-	Iran	59	6	53	0
Total			4,463 100%	182 4.1%	758 17.0%	3,723 78.9%

Source: JICA Study Team.

Note: Share of Aktau route between China (Coastal Areas) and China (Inland Areas) and Iran is assumed to be 10%.

Table 8.2-1 (3) shows the transit trade between East Asia and the Caucasus.

On this corridor, the total transit trade between East Asia and the Caucasus is about US \$ 0.7 billion, of which share on Turkmen route is about 80 % while that of Aktau route is only the remaining 20 %. This is because the competing situation of Aktau route is very weak.

Table 8.1-8 (3) Transit Trade for Target Area of Trans-Kazakhstan Route between East Asia and the Caucasus in 2006

(Unit: US\$ Million)

			Total Trade	TRACECA Aktau Route	TRACECA Turkmen Route
Japan/Korea	-	The Caucasus	162	32	130
China (Coastal)	-	The Caucasus	499	100	399
China (Inland)		The Caucasus	6	1	5
Total			667 100%	133 20.0%	534 80.0%

Note: Share of Aktau between East Asia and the Caucasus is assumed to be 20%.

Source: JICA Study Team.

Table 8.1-8 (4) shows the transit trade between East Asia and the Central Asia.

On this corridor, the total transit trade between East Asia and the Central Asia is about US \$ 11 billion, of which share on Turkmen route is 100 %, implicating the strength of Trans-Kazakhstan route.

Table 8.1-8 (4) Transit Trade for Target Area of Trans-Kazakhstan Route between East Asia and the Central Asia in 2006

(Unit: US\$ Million)

			Total Trade	TRACECA Turkmen Route
Japan/Korea	-	The Central Asia	1,729	1,729
China (Coastal)	-	The Central Asia	9,315	9,315
China (Inland)		The Central Asia	132	132
Total			11,176 100%	11,176 100.0%

Source: JICA Study Team.

(2) Marketing for Transit Trade

In summary, total transit trade and that used by Trans-Kazakhstan route is summarized in Table 8.1-8(5). From this table, it can be said as follows;

- a) Among transit trade affecting the Trans-Kazakhstan route, % share of Trans-Kazakhstan Route is only 1.5%. This is largely due to low share between East Asia and Europe and Russia.
- b) % share of Trans-Kazakhstan Route in transit trade between East Asia and Central Asia is almost 100 % while that between East Asia and Iran and Caucasus is 12.5 % and 19.7 % respectively.

From this table, following conclusions can be made:

- a) Although it may be difficult to increase share of Trans-Kazakhstan in the transit trade market between East Asia and West Europe among competing routes, it may be possible to increase its share of Trans-Kazakhstan in the transit trade between East Asia and East Europe, and between East Asia and Russia. This shall be a marketing target area in future.
- b) Market share of Trans-Kazakhstan Route between East Asia and Iran and Caucasus can be possible to rise up maybe 50 % of total trade. This also shall be marketing target area in future.
- c) Market share of Trans-Kazakhstan Route between East Asia and Central Asia is almost 100 %. However, competing mode against the railway transport is road-based truck transport. In order to win the competition, two (2) major factors, i.e. transport times and costs, shall be kept the comparative advantages with road based truck transport.

**Table 8.1-8 (5) Transit Trade for Target Area of Trans-Kazakhstan Route
between East Asia and Central Asia in 2006**

(Unit: US \$ Million)

Origin	Dstination	Total Trade	Trans-Kazakhstan Route	% Share of Trans-Kazakhstan Route
East Asia	- West Europe	781,918	81	0.01
East Asia	- East Europe	34,097	489	1.4
East Asia	- Russia	41,627	539	1.3
East Asia	- Iran	7,529	940	12.5
East Asia	- Caucasus	669	132	19.7
East Asia	Central Asia	11,176	11,176	100.0
Total		877,017	13,357	1.5

Source: JICA Study Team

Note: Trans-Kazakhstan between East Asia and Caucasus is only considered as TRACECA Kazak Route.

8.1.5 Direction to Marketing

8.1.5.1 General

Preceding section 8.1.2 described how to establish a more efficient marketing system, referring to marketing in foreign countries. In reality, there are various approaches that can be taken to cultivate customers, but the most important issue is to offer an attractive rail transportation system to customers and make more profits.

Given that the main export items in Kazakhstan are natural resources such as oil, which cannot be transported by container, it is very important to cultivate more customers with import or transit cargos passing through Kazakhstan that can be transported by container. For that purpose, it is very important to establish a faster and more accurate rail transportation system, in particular, long haul transportation by rail. In specific terms, it is very important to consider the possibility of forming block trains in various major corridors in Kazakhstan as a tool to cultivate customers. A possibility of forming a block train between Dostyk and Aktau, which is one of the main corridors in Kazakhstan, is illustrated as follows. The analytical method described below can be applied to other routes.

8.1.5.2 Merits of Block Train Formation for Kazakhstan

The formation of block trains linking the east to the west (Dostyk to Aktau) will be beneficial to Kazakhstan in the following ways.

Box 8.1-2 Merits of Block Train Formation for Kazakhstan

- Block train formation between Dostyk and Aktau may lead to i) more direct trade between East Asian countries such as Japan, South Korea and China and western Kazakhstan (for example, Aktau) and ii) more transit trade from these East Asian countries to Azerbaijan, Russia or Eastern Europe passing through Kazakhstan. In particular, for transit cargo, more flexible transportation tariffs can be offered, which may lead to increased trade.
- Block train formation between Dostyk and Aktau refers only to the route passing through Kazakhstan. Accordingly, since this route would not pass through any other countries in contrast to other routes (for example, the Kazakhstan-Uzbekistan-Turkmenistan-Azerbaijan route), interference (inspections of transit goods, etc.) by the other countries can be minimized.
- Improved efficiency of east-west transportation through the block train formation between Dostyk and Aktau represents a threat to the existing routes such as that described above. Accordingly, it has the potential to stimulate better efficiency on these existing routes (rationalization of inspection functions, reduction of tariffs for transit cargos in the other countries and so forth)
- The block train formation may lead to an increase in revenues through an increase in cargo volume and long-distance cargo transportation.
- Block train formation could contribute to the development of Mangystau region. In particular, if a special economic zone is developed in Aktau, there is a possibility that this route would be one of the main routes to supply sources of materials or equipment in the future.

The operation of the block train is based on the following assumptions and uncertainties:

- KTZ basically operates freight trains in units of 50 container cars. This means that if the container cars are fewer than 50, no block train can be operated. Operation of a block train depends largely cargo accumulation.

- For customers, awareness of block train operation depends largely on regular operation. Without operation of the train, customers may not be interested in using the train.
- In the case of international (export/import and transit) block train operation, operation permits for international trains must be issued.

However, it is not sufficient to simply arrange a block train along this route. Other requirements are shorter and stable transit times for transportation, simplification of customs procedures, more efficient inspection of transit cargos, review of the tariff system and an efficient transportation setup by sea linking Aktau with ports in Azerbaijan (Baku Port), Russia (Astrakhan), Iran (Bandar Amir Abad) and so forth. These customs procedure improvements, infrastructure development, and so forth are explained in Chapter 7 and / or 8.2.

8.1.5.3 Direction of Comprehensive Marketing (Summary)

(1) Companies to be targeted

Active marketing should be implemented toward domestic or foreign customers with commodities such as construction materials and industrial plant equipment, as well as motor vehicles, textiles, machinery, electric appliances, foods, wood products and so forth, which can be placed in containers.

(2) Direct cargo to Kazakhstan

First, companies in Kazakhstan that currently import cargos by container or that might possibly do so, should be targeted. In particular, corporations such as oil or gas companies in Kazakhstan must be intensively targeted (see Table 8.1-9). As these companies import a great deal of materials or equipment which can be placed in containers from Europe or the USA, companies in the East Asian region could be able to supply these materials or equipment by railway transportation. Therefore, in addition to oil or gas companies in Kazakhstan, active marketing efforts should be directed to companies in East Asian countries neighboring to Kazakhstan which can supply such goods.

Table 8.1-9 Oil/Gas Sector in Kazakhstan

Area	Shareholders
Tengiz (Estimated reserve: 6-9 billion barrels)	Chevron: 50%, ExxonMobil: 25%, Kazakhstan/KMG: 20%, LUKArco: 5%
Kahagan (Estimated reserve: 7-9 or 9-13 billion barrels)	(Agip KCO) Agip Caspian Sea: 18.52%, ExxonMobil: 18.52%, Shell: 18.52%, Total E & P: 18.52%, ConocoPhillips: 9.26, KMG: 8.33%, INPEX: 8.33%
Karachaganak (Estimated reserve: 2.4 billion barrels and others (Gas: 453 billion cubic meters)	British Gas: 32.5%, Agip: 32.5%, Chevron: 20%, LUKOIL: 15%

Source: Japan Machinery Centre for Trade and Investment, "Study on Central Asia Plant Market 2006."

In addition, more active marketing toward corporations in Kazakhstan and other countries with other import items that can be placed in containers (motor vehicles, textiles, machinery, electric appliances,

foods, wood products and so forth) is required. In particular, automobile companies, which import a great deal of cars from not only Europe but also Japan or South Korea (Hyundai, Subaru and so forth through CLB) to Kazakhstan, must be targeted.

(3) Transit cargo passing through Kazakhstan

Countries neighboring Kazakhstan maintain high economic growth rates (in 2006, Russia: 7.5%, China: 11.7%, Iran: 6.0%, Azerbaijan: 9.0% and so forth: See details in Chapter 4.1.3). With regard to transit cargos passing through Kazakhstan, it is very important to implement active marketing toward foreign customers in these countries.

In the short term, corporations in East Asian countries (Japan, South Korea and China and so forth) and other countries neighboring Kazakhstan (Russia, Iran², Azerbaijan, East Europe and so forth) should be targeted. For that purpose, the current export and import situation in the relevant countries must be analyzed. Active marketing toward corporations with transit cargos³, in particular, westbound cargos, must be prioritized.

In the intermediate and long term, more marketing for transit cargos passing through Kazakhstan from the east to not only neighboring countries but also Europe will be required⁴.

Strengthening marketing functions to cultivate customers with container cargos bound for the western area of Kazakhstan or transit cargos must be prioritized. However, in the intermediate and long term, marketing functions to cultivate customers with container cargos from the west to the east (e.g., from Europe, Eastern Europe to the eastern area of Kazakhstan or East Asian countries, from Kazakhstan to East Asian countries) must also be strengthened. To increase the cargo volume of rail transportation from the west to the east may lead to not only revenue increase but also reduce the cost of positioning empty container to points of origin such as the eastern area of Kazakhstan or East Asia, thus enabling Kazakhstan to offer more competitive tariffs to customers.

Areas or countries to be targeted in order to attract container cargos for bilateral trade with Kazakhstan or transit trade passing through Kazakhstan are summarized in Table 8.1-10.

² In order to increase the amount of transportation to Iran, better arrangement of transportation by sea in the Caspian Sea is required.

³ Details on how to make an approach to transit cargos are described in Appendix 8.1.3-2.

⁴ In order to increase the volume of transit cargos to Europe, efficient arrangement of transportation by railway in other countries is required.

Table 8.1-10 Areas and Countries to Be Targeted for More Container Transportation

Term	Targeted Areas and Countries	Targeted Companies
Short term (1-3 years)	(Westbound cargo) 1 East Asia Kazakhstan (bilateral cargo) 2 East Asia Kazakhstan Countries neighboring Kazakhstan such as Russia, Iran, Azerbaijan, Eastern Europe (transit cargo)	Domestic and foreign corporations transporting or producing oil, gas, construction materials, motor vehicles, textiles, machinery, electric appliances, foods, wood products and so forth
Intermediate and long term (4-10 years)	(Westbound cargo) 1 East Asia Kazakhstan (bilateral cargo) 2 East Asia Kazakhstan Countries neighboring Kazakhstan such as Russia, Iran, Azerbaijan, East Europe or Europe (transit cargo) (Eastbound cargo) 1 Kazakhstan East Asia (bilateral cargo) 2 Countries neighboring Kazakhstan such as Russia, Iran, Azerbaijan, Eastern and Western Europe Kazakhstan East Asia (transit cargo)	

(4) Basic Approach to Customers

First, marketing activities to clarify constraints and support needs of customers as to railway transportation are required. For that purpose, a series of functions in information collection and analysis, and implementation and review of marketing must be strengthened as described in Section 8.1.2. In particular, the functions of information collection and analysis, and implementation of marketing to foreign customers including examining the issue of establishing marketing branches in foreign countries, must be improved.

(5) Towards A More Efficient Transportation System in Pursuit of More Customers

An efficient transportation system to connect the above targeted areas or countries is needed. In particular, forming block trains in Kazakhstan will bring about shorter transit time and simple procedures for transportation, which may lead to more import or transit cargos.

It is very important to examine the possibility forming block trains between Dostyk and Aktau, which has great potential to cultivate customers and in particular, foreign customers in East Asian countries. With regard to the possibility of block train formation, besides the route between Dostyk and Aktau, there may be a variety of routes on which block trains can be arranged for transit cargos passing through Kazakhstan.

For example, one import dealer transports 800 new cars after the completion of customs clearance from Almaty to a western region (Atyrau or Aktau and so forth). On average, 2.5 cars can be loaded into a standard 40-foot container. Therefore, the route from Almaty to the western region also has great potential to cultivate customers in car transportation by rail. However, in reality, it takes maximum of three weeks to deliver containers from Almaty to the western area because it takes a maximum of two weeks to wait for platforms or containers available and one week to transport.

Regarding block train formation (e.g., 50 cars) from East Asia (Japan, South Korea, China and so forth), connecting the line between Dostyk and Aktau with no stops at any station, modified block train formation with one stop at Almaty only to load some containers, which will lead to high

utilization of available space, could also be considered. For that, intensive marketing on both sides, in East Asia and Kazakhstan, will be required (e.g., 50 cars= 42 cars between Dostyk and Aktau + 8 cars between Almaty and Aktau). Moreover, cargos which are transported to Aktau by block train can be for the Mangystau region or other destinations facing the Caspian Sea. Therefore, a clear understanding of market conditions in other destinations facing the Caspian Sea is also very essential (port conditions in the Caspian Sea are described in Appendix 8.1.3)

For that purpose, marketing to these areas, and close relationship and negotiations with concerned parties such as China Railway will be required. In this way, a framework to increase cargo volume of containers to be transported must be carefully considered through intensive marketing.

For example, apart from the route (East Asian countries =>Kazakhstan (*Dostyk-Aktau*)), block train formation on other routes such as (East Asia=>Kazakhstan (*Dostyk-Ozinki*) =>Russia=>Eastern or Western Europe) may be considered depending on the final destination. Therefore, besides the route between Dostyk and Aktau, the possibility of block train formation on various routes passing through Kazakhstan must be examined through in-depth marketing based on customer needs.

In order to establish various routes for block train formation, cooperation with other countries is very important. For example, the current point of origin of a block train formation in China is Lianyungang. Many cargos from Japan and South Korea are transported by block train via Lianyungang to Kazakhstan. However, in order to increase the cargo volume of containers to be transported by rail bound for Kazakhstan or other countries, passing through Kazakhstan, as KTZ wants to do, it is important to investigate whether other stations such as Tianjin, Shanghai, Guangzhou or Urumqi where many Japanese, Korean or Chinese corporations are also located, can be points of origin for a block train, in other words, whether a block train between these origins and Dostyk, is possible or not. (For example, in 2007, Toyota has several factories in Tianjin, Sichuan, and Guangzhou with an annual production capacity of 690,000 cars; Honda has also several factories in Guangzhou with an annual production capacity of 530,000 cars. Currently these cars are produced due to great demand in China, but these cars could also be produced for export to central Asia. (Data source: Fourin, Nihon Jidousha Sangyou Chugoku Jidousha Tenbou 2015[Prospects for Automobiles in China for the Japanese Automobile Industry 2015]).

In this way, it is very important to design an efficient marketing plan and implement it considering various possibilities as shown in the summary Table 8.1-11. To do that, efficient transportation system arrangement (better infrastructure at major stations, e.g., Dostyk station, sufficient supply of containers and platforms, efficient database on container transportation and so forth), more efficient infrastructure at Aktau Port and a more efficient sea transportation system in the Caspian Sea as well as more efficient operation of rail transportation in other neighboring countries is required. Otherwise, it is very difficult to cultivate customers. Kazakhstan, located in Central Asia, will eventually have to establish major corridors connecting the east and the west in the Eurasian Continent as shown in Figure 8.1-4.

8.1.6 Establishment of Kazakhstan Logistics Research Development Center

In general, the logistics system in Kazakhstan is still at the developing stage compared with the industrial countries.

The marketing potential on the logistics system in Kazakhstan is expected to be prosperous in the future.. It is very important for Kazakhstan's economy and economic growth in terms of achieving sustainable economic development, effective distribution of natural resources, evolution of the economic structure, improving the investment environment and strengthening competitiveness on the Trans-Kazakhstan route to promote the modern logistics system.

Therefore, it is proposed to establish a National Logistics Development Center in the Ministry of Transport and Communications (MTC).

This logistics center consists of the following members:

- Ministry of Transport and Communication(MTC)
- KTZ
- KTS
- Representatives of Oblast Governments
- Aktau International Sea Commercial Port
- Representatives of Forwarders

The major roles of the Center are as follows:

- Formulation and improvement of logistics infrastructure
- Research and development of modern logistics system
- Research and development of logistics information system
- Periodical survey for container cargo movement
- Creation of database for cargo traffic
- Human resource development
- Logistics industry – academic coordination

Table 8.1-11 Marketing Function Plan:Summary (10 years)

Items	Short term (1-3 years)			Intermediate and long term (4-10 years)						
	1	2	3	4	5	6	7	8	9	10
1.Strengthening Marketing structure, system in particular, marketing in foreign countries)	<ul style="list-style-type: none"> Strengthening marketing structure and systems in domestic and foreign countries in items described 8.2 			<ul style="list-style-type: none"> Strengthening marketing structure and systems in domestic and foreign countries in items described 8.2 						
2. Cultivation of domestic Customers	<ul style="list-style-type: none"> Cultivation of domestic customers (In particular, more marketing to customers with import cargo to Kazakhstan) 			<ul style="list-style-type: none"> Cultivation of domestic customers (In particular, more marketing to customers with import cargo to Kazakhstan) 						
3. Cultivation of foreign Customers	<ul style="list-style-type: none"> More marketing to foreign customers with import cargo to Kazakhstan or transit cargo passing through Kazakhstan Target (East Asia : Japan, South Korea, China or Neighboring countries: Russia, Iran, Azerbaijan, East Europe etc) (Oil, gas extraction, construction, automobile, electric companies etc) 			<ul style="list-style-type: none"> More marketing to foreign customers with import cargo to Kazakhstan or transit cargo passing through Kazakhstan Target (East Asia : Japan, South Korea, China or Neighboring countries: Russia, Iran, Azerbaijan, East Europe and, Europe etc) (Oil, gas extraction, construction, automobile, electric companies etc) 						
4 . Block Train formation (Domestic & Overseas)	<p>(Promotion of block train formation: domestic block trains + foreign block trains)</p> <ol style="list-style-type: none"> A block train formation between China (Lianyungang, Urumqi etc) and Kazakhstan (e.g. Aktau) A block train formation: China (Lianyungang, Tianjin, Shanghai, Guangzhou, Urumqi etc)–Kazakhstan– Neighboring countries (Russia, East Europe etc), Europe or countries around Caspian Sea etc) 			<p>(Promotion of block train formation: domestic block trains + foreign block trains: in particular for transit cargoes)</p> <ol style="list-style-type: none"> A block train formation: China (Lianyungang, Tianjin, Shanghai, Guangzhou, Urumqi etc) – Kazakhstan – Neighboring countries (Russia, East Europe etc), Europe or countries around Caspian Sea etc) A block train formation: Russia and East Europe –Kazakhstan– China (Lianyungang, Tianjin, Shanghai, Guangzhou, Urumqi etc) 						
5. Assumption for marketing	<ul style="list-style-type: none"> More efficient transportation system by rail (Better infrastructure arrangement of major stations; Dostyk Aktau and so forth) Sufficient supply of containers and platforms More efficient data base on container transportation etc 			<ul style="list-style-type: none"> More efficient transportation system by rail (Better infrastructure arrangement of major stations; Dostyk, Aktau and so forth) More efficient infrastructure arrangement of Aktau port More efficient transportation system by sea in the Caspian Sea Sufficient supply of containers and platforms More efficient operation of rail transportation in other neighboring countries etc 						

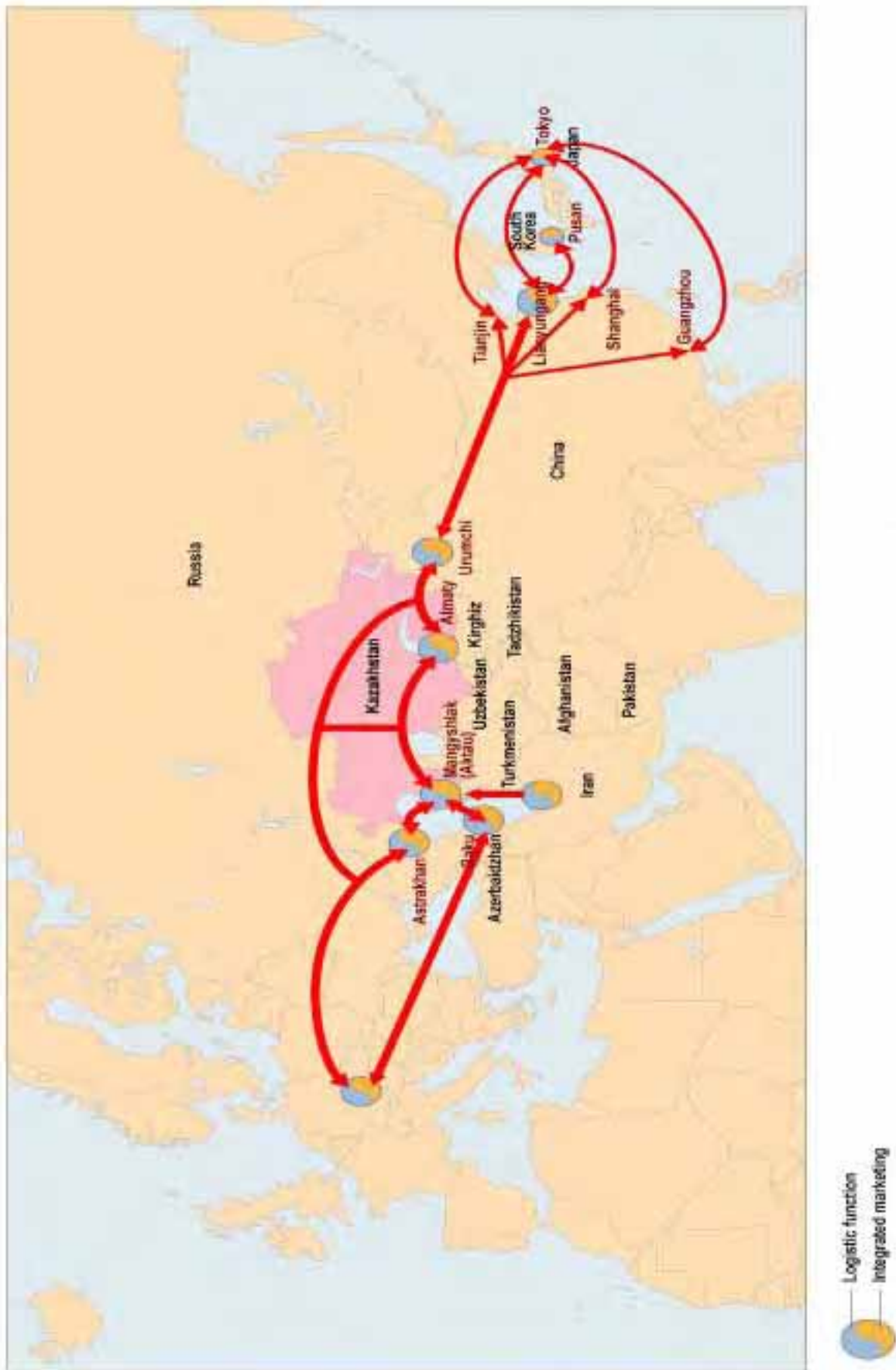


Figure 8.1.4 Concept of Eurasian Corridors Passing through Kazakhstan

8.2 Reinforcement Plan for Trans-Kazakhstan Route

8.2.1 General

Figure 8.2-1 shows the methodology for reinforcing the Trans-Kazakh route. In Chapter 4.2, an analysis of competing routes on the Trans-Kazakhstan route was carried out. As a result, the potential origin and destination of countries regions and target areas for the Trans-Kazakhstan route were also identified.

In Chapter 3.5, the stakeholders with regard to the logistics system of international and transit trades were analyzed. Based on these analyses, how to reinforce Trans-Kazakhstan route will be discussed and proposed in this Chapter.



Figure 8.2-1 Methodology of Reinforcement Plan for the Trans-Kazakhstan Route

8.2.2 Assessment of Trans-Kazakhstan Route

In this column, the assessment of trans-Kazakhstan route is conducted based on the evaluation for the strength and weakness of trans-Kazakhstan route in comparison with that of other competitive freight routes. As already mentioned in 8.1.4.1, Trans-Kazakhstan route was defined as Trans-Asian Route, TRACECA Aktau Roue, and North South route in this study.

8.2.2.1 Assessment of Trans-Asia Route

As mentioned in Chapter 4, there are the following four (4) routes in the East Asia-Europe/Russia corridor.

- Trans-Asia Route
- Trans-Siberian Route
- TRACECA Route
- All Water Route



Figure 8.2-2 Alternative Routes in the East Asia-Europe/Russia Corridor

Table 8.2-1 summarizes the weaknesses and strengths of these alternative routes in the East Asia-Europe/Russia corridor, including the Trans-Asia Route. The following comments can be made regarding the Trans-Kazakhstan Route from this table:

(1) Strengths

- Shortest traveling distance between Asia and Europe.
- Can provide a seamless railway route from the East Asian coast to major European industrial areas with a minimum number of transshipment points (Dostyk and Brest)
- Can provide competitive conditions for transit time and/or transport cost for cargo originating from China coastal areas and China inland areas.

(2) Weaknesses

- Lack of awareness in the market of this route as an alternative trunk line connecting Asia and Europe, while it is well-known as a trunk line for the Central Asia region. Due to their limited experience with actual transport on this route, some cargo-owners/forwarders are hesitant to choose this route.
- Due to combined transportation modes, it is difficult to warrant the reliability of through transport service (punctuality, safety and cargo information) by one transporter to cargo-owners.
- Due to the complex customs procedures on the Russian side, transit time is long.
- Due to defunct priority policy for transit cargos, tariffs for transit cargos have greatly increased.
- No provision for transit cargo traceability due to the poor cargo information system.

Table 8.2-1 Strength and Weakness of alternative Routes between East Asia and Europe and Russia

	Strength	Weakness
Trans - Asia Route	<ul style="list-style-type: none"> • shortest traveling distance between Asia and Europe • provision of seamless railway route from East Asian Coast Line to European major industrial area with minimum number of transshipment points (Dostyk and Brest) • provision of competitive condition on transit time and/or transport cost for the cargo originated from China Coastal Area and China Inland Area. 	<ul style="list-style-type: none"> • Lack of recognition in the market as an alternative trunk line to connect Asia and Europe, while well known as a trunk line for Central Asia region. • Due to limited experience of actual transport on this route, some cargo-owners/forwarders are hesitant to choose this route. • Difficult to warrant the reliability of through transport service (punctuality, safety, and cargo information) by one transporter to cargo-owners, due to combined transportation mode, • Due to the complex customs procedure in Russian side, it takes a lot of times of transit time, • Due to defunct priority policy for transit cargoes, tariff for transit cargoes become greatly increases • No provision of traceability of transit cargoes due to poor cargo information system
Trans-Siberian Route	<ul style="list-style-type: none"> • Provision of seamless railway route from East Asian Coast Line to European major industrial area with minimum number of transshipment points (Dostyk and Brest) • Historical performances between Asia and Europe since 1970 	<ul style="list-style-type: none"> • Due to defunct priority policy for transit cargoes, tariff for transit cargoes become greatly increases • Difficult to warrant the reliability of through transport service (punctuality, safety, and cargo information) • No provision of traceability of transit cargoes due to poor cargo information system
TRACECA Route	<ul style="list-style-type: none"> • Historical performances between Central Asia and Europe since 1993 with support of EU • Contribution of international trade between countries of Central Asia and Europe • Due to no transport links within Russia, there are no political influence to transport cargoes 	<ul style="list-style-type: none"> • Transit time is longer and transport costs are the most expensive among alternative routes between East Asia and Europe • Many transshipment points of railway and marine transport need to transport to destinations.
All Water Route	<ul style="list-style-type: none"> • Very long historical performances between Asia and Europe since Ancient times • Due to many shipping lines in services, transport capacity is big • Transport time and arrival time in Europe are in punctual and transport cost is cheaper than the other modes although transport time needs to be longer • Cargo information can be provided in any time due to provision of traceability of cargoes 	<ul style="list-style-type: none"> • Transit time is the longest among alternative routes between East Asia and Europe. • Multi-modal transport system needs to transport the cargoes to destinations

8.2.2.2 Assessment of the TRACECA Route

(1) What is the TRACECA Route?

Transport Corridor Europe-Caucasus-Central Asia (TRACECA) is a program aimed at supporting political and economic development in the Black Sea Region, the Caucasus and Central Asia by means of international transport improvement. The program objectives were formulated in 1993 at a Conference in Brussels by the European Commission to support the integration of 8 countries in the Caucasus and Central Asia into the international economy by improving and enhancing trade and transport.⁵ In other words, this program aims to develop a platform for a transport corridor in Europe, the Caucasus and Central Asia free of influence from the Russia Federation. Since the mid-1990s, it has been proceeding with projects and studies through Technical Assistance for CIS (TACIS).

In Central Asia, the following three (3) railway transport corridors have been developed, as shown in Figure 8.2-4.

- TRACECA Turkmen Route: Dostyk-Almaty-the Caspian Sea-Azerbaijan-Georgia-Europe
- TRACECA Aktau Route: Dostyk-Aktau-the Caspian Sea-Azerbaijan-Georgia-Europe
- TRACECA Uzbek Route: Dostyk-Almaty-Tashkent-Aktau-the Caspian Sea-Azerbaijan-Georgia- Europe

Among these routes, the TRACECA Turkmen Route is the principal route.



Figure 8.2-3 Three Alternative TRACECA Routes

⁵ TRACECA Programme in Brief on the TRACECA Homepage.

(2) Weaknesses and Strengths of the TRACECA Routes

Table 8.2-2 compares various TRACECA Routes from the viewpoint of railway length, transport time, number of transshipment points, number of customs clearance, number of countries connected to this route and number of ferries in the Caspian Sea. As clearly described in this Table, the **TRACECA Aktau Route** has the following weak and strong points:

Strengths

- This route passes through Kazakhstan only, so there is no need for customs clearance time
- Due to not connecting with other countries, transport time can be shorter than that of the other routes

Weaknesses

- There are fewer freight railway services on this route than on the other two routes. This is because this route connects three countries, that is, two countries in Central Asia and China. As a result, freight traffic volume carried by railway is lower than on the other routes.
- The length of the railway on this route is longer (610 km) than that on the TRACECA Turkmen Route. At the same time, the freight traffic tariff on this route is more expensive than that on the TRACECA Turkmen Route although there is no customs clearance fee.

Table 8.2-2 Comparison of TRACECA Routes from Dostyk to Baku

	TRACECA Turkmen Route	TRACECA Aktau Route	TRACECA Uzbek Route
Length (Km)	4,006	4,619	4,610
Transport Time (days)	7.1	8.1	8.1
No. of Transshipment points	1	1	1
No. of Customs Clearance	3	1	2
No. of countries connected to this route	<ul style="list-style-type: none"> • TRACECA 5 countries in Central Asia plus China & Iran 7 countries	<ul style="list-style-type: none"> • China, Kazakhstan and Kyrgyz 3 countries	<ul style="list-style-type: none"> • China, Kazakhstan, Kyrgyz, Uzbekistan 4 countries
No. of Ferries in the Caspian Sea	6 -7 ships/week	3-5 ships/week	

Source: JICA Study Team.

8.2.2.3 TRACECA – Iran Route

There are two (2) routes between Dostyk and Tehran in Iran as follows (see Figure 8.2-4);

- Aktau Route: Dostyk-Almaty-Aktau-Bandar Anzali-Tehran
- Sarakhs Route: Dostyk-Almaty-Tashkent-Sarakhs-Tehran



Figure 8.2-4 Alternative Routes on the Iran Route

Table 8.2-3 compares the two (2) alternative routes from the viewpoint of length, transport time, number of transshipment points, number of customs clearance and transport costs. As described in this Table, the **TRACECA Aktau Route** has the following weak and strong points:

Table 8.2-3 Comparison of TRACECA Routes from Dostyk to Tehran in Iran

	TRACECA Iran Route	TRACECA Aktau Route
Length (km)	4,240	4,932
Transport Time (Days)	12	14
No. of Transshipment points	1	2
No. of Customs Clearance	3	1
Transport Cost (US \$)	2,647	2,209

Source: JICA Study Team.

Strength

- Transport cost on this route is cheaper than on the other route.

Weaknesses

- On the Aktau route, it is necessary to transship two (2) times in Aktau, Kazakhstan and Bandar Anzali, Iran. As the results, transport needs more time than on the other route.
- There are fewer freight railway services on this route is smaller than on the other route.
- Length on this route is longer (692 km) than on the other route.

8.2.3 Strengthening the Trans-Kazakhstan Route

In order to gain market-competitiveness and retain the strengths of Trans-Kazakhstan transportation routes under the above-mentioned environments, several aspects of transportation services should be thoroughly reviewed and necessary measures taken for improvement. The following are the salient points for overall improvement of the Trans-Kazakhstan routes from the viewpoint of international logistics.

(1) Infrastructure Development

As mentioned above, the infrastructure in Kazakhstan has the following weaknesses:

- The railway networks in Kazakhstan were constructed in the direction to Russia due to the historical background in the region, so the east-west nationwide network is very weak.
- As a result, concerning route competitiveness among TRACECA routes, the TRACECA Aktau Route is the weakest because this route detour from the east to the north and then west.
- Dostyk terminal, which is the gateway to East Asia, is a bottleneck point due to its shortage of capacity.
- Aktau Port with terminal, which is the western gateway to the Caucasus and Europe, is also a bottleneck point due to the shortage of capacity at Aktau Port.

In order to remove these bottleneck points, the following infrastructure development projects are proposed in this study.

- Construction of Railway Link between Beynuu and Shalaqur on a short-term basis
- Construction of Railway Link between Shalaqur and Dzhezkazgan on a medium-term basis
- Improvement of Dostyk terminal
- Construction of Aktau North Port
- Construction of Aktau Logistics Terminal



Figure 8.2-5 Proposed Infrastructure Development

(2) Establishment and Expansion of Block Train Operation System

For more reliable railway transportation, it is essential to achieve punctuality of the schedule, safety of the cargos and rapid transit through the route. One effective measures to achieve these essential prerequisites is to establish block train services.

Table 8.2-4 shows the historical trend of block trains in Kazakhstan. Block trains for transit cargos have increased tremendously since 2004. There are several reasons for this, as follows.

- Worldwide enterprises have invested in Kazakhstan and Central Asian countries because economic globalization has spread to Kazakhstan and the Central Asian region. As a result, freight movements between these enterprises have been activated.
- Cargo shippers/consumers have recognized the advantages of block train services due to faster transport time and safety and security of cargos.
- As KTZ and KTS have made great marketing efforts over the past several years, the Trans-Kazakhstan Route has become popular with shippers and/or consumers.

Table 8.2-4 Historical Trends for Block Trains in Kazakhstan

	2001	2002	2003	2004	2005	2006
Export	0	0	11	44	167	305
Import	0	0	52	153	297	375
Transit	1	0	21	35	21	72
Total	1	0	84	232	485	752

Source: KTZ

This tendency is expected to continue in future. This is because a more global economy is being developed. It is therefore recommended to establish and expand the block train operation system.

The operation routes for block trains are proposed as follows. (See Figure 82-6)

- a) Lianyungang / Urumqi – Dostyk – Almaty
- b) Lianyungang / Urumqi – Dostyk – Aktau (newly proposed)
- c) Lianyungang / Urumqi – Dostyk – Astana (newly proposed)
- d) Lianyungang / Urumqi – Dostyk – Astana – Moscow (newly proposed)
- e) Nakhodka (Russia) – Novosibirsk (Russia) – Almaty
- f) Nakhodka (Russia) – Novosibirsk (Russia) – Asake (Uzbekistan)
- g) Lianyungang / Urumqi (China) – Dostyk – Asake (Uzbekistan)



Figure 8.2-6 Proposed Block Train Operation Routes

(3) Coordination with Neighboring Countries

The improvement of transit cargo through the Trans-Kazakhstan Route cannot be achieved by Kazakhstan alone. It can be achieved only through the promotion and “selling” of the trade routing through Kazakhstan towards the countries involved, particularly neighboring countries. The prospective origin of the transit cargo to Kazakhstan is China. In order to develop trade and transport between China and Kazakhstan and promote China’s trade with Europe, Central Asia and the Caucasus through Kazakhstan, it is important to maintain close communications with the related organizations and government agencies in these countries. The activities should be spread in various sectors of the two countries as follows.

1) Government to government

In order to realize truly seamless cargo flow across borders, it is absolutely necessary to

maintain inter-governmental talks and conclude the necessary agreements on cross-border transportation issues. These kinds of work can only be handled by the government agencies. Therefore, the government should always be aware of the current needs of Kazakhstan's private sector. It is suggested in this regard to have regular meetings with industrial groups such as shippers and forwarders associations. Based on a clear understanding of the situation, the government should actively talk with the neighboring countries to promote trade and strengthen ties, particularly with China, Russia, Central Asia and the Caucasus countries which equally have great potential to generate transit cargos through the Trans-Kazakhstan Route. In order to increase transit trade and attract more transit cargos from those countries, bilateral treaties to provide favorable transit conditions, such as reduced documentation requirements, for transit cargo to the related countries should be taken up on the agenda and worked out.

2) Railway to railway

Since the railway companies of each country are involved in day to day train operation carrying international transit cargos, discussion among the railway companies is the key to improve cross-border train operation. Several international organizations are established and actually involved in such work. It is important to work as a single unit for the achievement of efficient railway service and competitive pricing to attract trade. Other competing transport routes such as the Trans-Siberian Route and the All-water Route are relatively self-sustaining in providing through transportation, but Kazakhstan can only provide international through transportation by working together with other transportation means. In particular, the close cooperation with Chinese Railways is the most essential, considering future cargo potential.

3) Customs to customs

It is also important to establish close relationships with the customs of neighboring countries. A close relationship established on the firm ground of IT communication systems connecting the two countries makes it possible to exchange customs information quickly and in advance so that customs formalities at the border can be conducted efficiently to achieve rapid transfer of the cargos through the border point. On this basis, the facilitation of customs procedures and unification/minimization of required documents should be pursued.

Table 8.2-5 shows the proposed government to government coordination in order to achieve smooth container transit and the present regional framework, for reference. Government coordination is a prerequisite for increasing transit cargos. It is recommended that coordination shall be carried out immediately, in order to increase container transit cargos.

Table 8.2-5 Government to Government Coordination

	Kazakhstan	Uzbekistan	Kyrgyz	Tajikistan	Trukmeni- stan	Russia	China	Iran	Azerbaijan	Georgia	EU	Others
Proposed International Railway Transport Coordination												
Present Regional Framework as Reference												
Eurasian Economic Community												Belarus
The Shanghai Cooperation Organization (SCO)												
Central Asia Forum (ACF)												
Central Asia Regional Economic Cooperation (CAREC)												
Economic Cooperation Organization (ECO)												Pakistan, Turkey Afghanistan
Central Asia Cooperation Organization (CACO)												
Commonwealth of Independent States (CIS)												Belarus, Moldova
Transport Europe Caucasus Central Asia (TRACECA)												Armenia

Source: World Bank Central Asia Regional Framework Paper Feb. 2004.

8.2.4 Promotion of Regional and Industrial Development cum Development of East – West Trans-Kazakhstan Route

Reinforcement of the east-west Trans-Kazakhstan route will enhance the industrial development potential along the Trans-Kazakhstan route while the industrial development generates more freight traffic demand. As the results, east-west Trans-Kazakhstan route shall be strengthened accordingly. As such, transport development and industrial development have development cycle. (See Figure 8.2-7) Therefore both transport development and industrial development are promoted simultaneously.

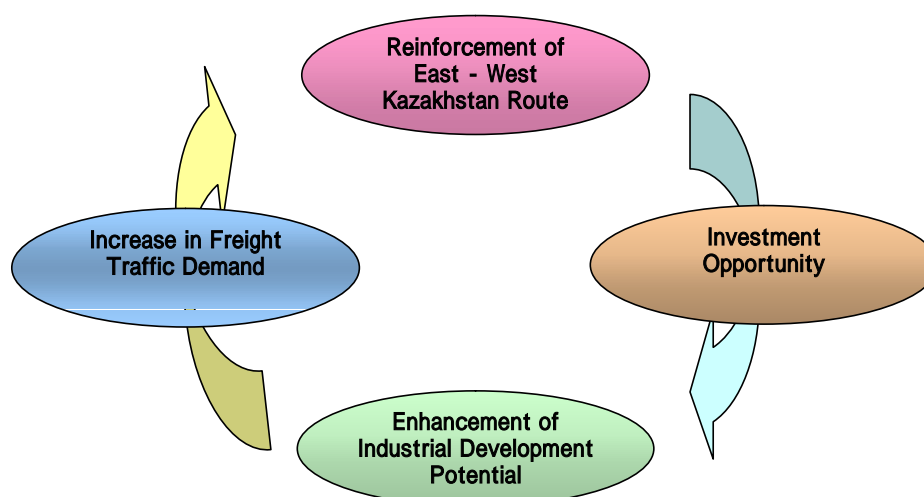


Figure 8.2-7 Development Cycle between Infrastructure and Industrial Development

Kazakhstan has an abundant supply of mineral and fossil fuel resources. Development of petroleum, natural gas, and mineral extraction accounts for 57% of national industrial output. Additionally, Kazakhstan has the world’s second-largest uranium, chromium, lead, and zinc reserves, the third-largest manganese reserves, the fifth-largest copper reserves, and ranks in the top ten for coal, iron and gold, in terms of mineral wealth. Table 8.2-6 shows the list of oil/gas reserves in Kazakhstan.

Table 8.2-6 Oil/Gas Sector in Kazakhstan

Area	Reserve Area
Tengiz	Estimated reserve: 6-9 billion barrels
Kahagan	Estimated reserve: 7-9 or 9-13 billion barrels
Karachaganak	Estimated reserve Oil: 2.4 billion barrels Gas: 453 billion cubic meters

. Source: Japan Machinery Centre for Trade and Investment, “Study of Central Asia Plant market 2006.”

Against the background of these mineral and fuel reserves and products, the “Innovative Industrial Development Strategy of the Republic of Kazakhstan for 2003-2015” has formulated and announced the priorities of industry as follows.

- Raw material processing
- Metallurgy
- Grain processing
- Science intensive and high-tech production
 - Biotechnology (new varieties and gene types of agricultural crops and animals, bacteria strains, etc.)
 - Nuclear technologies
 - Space technologies
 - Creation of new materials, chemical products

Based on the Strategy, the following industrial policies are expected to be promoted.

- a) Oil and gas machinery and oil refinery products, such as plastics and synthesized rubber, in the Caspian Sea Region
- b) Food processing in the north, south and southeast regions
- c) Textiles in the south region
- d) Metallurgy industry in Karaganda and Pavlodar regions

Based on these mineral and oil resources, the Government intends to develop the following

special economic zones.

- a) Khorgos Special Economic Zone
- b) Taskala Special Economic Zone
- c) Aktau Special Economic Zone

When these industrial policies are implemented and these special economic zones are in operation, they will generate a lot of cargo domestically, and if they become internationally competitive, trade (export and import) is expected to increase.

In addition, if the Khorgos, Taskala and Aktau triangle, which has a close physical relationship, is formed, regional development will be interconnected and logistics or export and import cargo flow will increase.

It is therefore recommended that regional and industrial development be promoted together with East-West Trans-Kazakhstan Route development. (Figure 8.2-8)



Figure 8.2-8 Proposed Infrastructure and Industrial Development

CHAPTER 9 FORMULATION OF IMPLEMENTATION PLAN

9.1 Implementation Plan Policy

In order to prepare the implementation program for a realistic and effective logistics system, the plans and projects recommended in the present Study are divided into three phases: the short term (2007-2010), the medium term (2011-2017) and the long term (after 2018). Allowable financial budgets for the transport and traffic sector for the short term (2007-2010) and the medium term (2011-2017) are estimated as shown in Table 9.1-1.

Table 9.1-1 Available Budgets for Transport Sector, 2007-2017 (Unit: Million Tenge)

Phase	Available Budget
Short term (2007-2010)	638.520
Medium term (2011-2017)	1,801,767

Source: Estimated by JICA Study Team based on the national budget of Kazakhstan 2005

Timing of implementation of the improvement strategy is shown in Table 9.1-2 taking into account priority of the measures. The basic policy for improvement is formulated as follows:

- Infrastructure development requiring huge investment costs will be invested in equally over the short term, medium term and long term periods.
- Infrastructure development not requiring substantial investment will be invested in over the short and medium term.
- “Soft” improvement measures not requiring high project costs and highly cost-effective will be invested in over the short term.

Table 9.1-2 Improvement Strategy and Timing

		Short Term (2007-2010)	Medium term (2011-2017)	Long Term (2018 -)
Railway Transport Development				
R-1	Railway Network Development			
R-2	Improvement of Railway Container Terminal			
R-3	Improvement in Freight Transportation System			
R-4	Improvement in Fright Transport Operation System			
R-5	Promotion of Containerization			
R-6	Railway Cargo Information System Improvement			
R-7	KTZ Marketing Function Development			
Road Transport Development				
T-1	Road Network Development			
T-2	Enhancement of Truck Industry			
Port and Marine Transport Development				
M-1	Port Development			
M-2	Caspian Marintime Transport Development			
Logistics Service Industry Development				
L-1	Construction of Logistics Terminal			
L-2	Forwarder Development Program			
Customs System Improvement				
C-1	Customs System Improvement			
C-2	Simplification of Customs System			
Regional and Industrial Development				
I-1	Special Economic Zone Development			
I-2	Regional Development			
Institutional and Human Resource Development				
J-1	Human Resource Capacity Development			
J-2	Institutional Development			

Note: Implementation strategy with priority Implementation strategy

9.2 Project Implementation Plan

Based on the preceding description of the implementation policy, Table 9.2-1 shows the project implementation plan. Project costs are estimated at 2,105.4 billion Tenge: of this total, 464.9 billion Tenge is required for the short term plan (2007-2010), 1,075.4 billion Tenge for the medium term plan (2011-2017) and 565.1 billion Tenge for the long term plan. Financial resources are expected to come from investment by the Government of Kazakhstan, JSC and the private sector.

Table 9.2-1 Project Implementation Schedule and Required Investment Amount

Measures	Cost (M Tenge)	Short Term (2008-2010)			Medium Term(2011-2017)							Long
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	(2018-)
Railway Transport Development	853,546											
R-1 Railway Network Development	509,389											
R-2 Improvement of Railway Container Terminal	229,194											
R-3 Improvement in Freight Transportation System	100											
R-4 Improvement in Fright Transport Operation System	100											
R-5 Promotion of Containerization	113,445											
R-6 Railway Cargo Information System Improvement	1,218											
R-7 KTZ Marketing Function Development	100											
Road Transport Development	1,187,759											
T-1 Road Network Development	1,186,009											
T-2 Enhancement of Truck Industry	1,750											
Port and Maritime Transport Development	62,540											
M-1 Port Development	48,940											
M-2 Caspian Maritime Transport Development	13,600											
Logistics Service Industry Development	100											
L-1 Multi-Modal Logistics Terminal	-											
L-2 Forwader Development Program	100											
Customs System Improvement	1,300											
C-1 Customs System Improvement	1,200											
C-2 Simplification of Customs System	100											
Economic and Industrial Development	0											
E-1 Special Economic Zone Development	-											
E-2 Regional Development	-											
Human Resource and Institution Development	200											
I-1 Human Resource Capacity Development	100											
I-2 Institutional Development	100											
Total Cost (M Tenge)	2,105,445	464,949			1,075,363							565,133
Cost Per Year (M Tenge)	154,031	154,983			153,623							-

(Source: JICA Study Team)

9.3 Formulation of Action Plan

Nine (9) projects with high effectiveness and priority for achieve the development goals among various projects in the implementation plan have been selected, proposed as action plans and shown in Table 9.3-1. These action plans are proposed in line with the development strategies outlined in Chapter 6.

Table 9.3-1 Proposed Action Plan and its Contents

Short Term Action Plan		Contents	Corresponding Measures in Implementation Plan
1	Improvement of Trans-Kazakhstan Route	• Construction of railway link between Shalqar and Beyneu	R1
		• Improvement of Dostyk Terminal	R2
		• Construction of Aktau Terminal	R2
		• Expansion of Aktau Sea Port	M1, M2
2	Strengthening of Block Train Operation	• Increase in block train between Liyungang/Urmqui and Almaty	R3, R4
		• Introduction of new block train between Liyungang/Urmqui and Astana	R3, R4
		• Introduction of new block train between Liyungang/Urmqui and Aktau	R3, R4
		• Introduction of new block train between Liyungang/Urmqui and Moscow	R3, R4
3	Strengthening of Marketing Function	• Strengthening of information collection and analysis function	R7
		• Function of cultivating more customers	R7
4	Strengthening of transport service industry	• Construction of multi-modal transport terminal	L1
		• Strengthening of forwarders	L2
5	Construction of Container Cargo Information System	• Construction of container cargo information system	R6
		• Construction of international cargo information system	R6
6	Improvement of Customs system Route	• Simplification of customs system	C1, C2
		• Standardization of customs system	C1, C2
7	Regional and Industrial Development	• Promotion of regional development	E2
		• Promotion of industrial and SEZ development	E1
8	Human Resource and Institutional Development	• Human resource development	I1
		• Institutional development	I2

Source: JICA Study Team

Measures	Organization	2007		2008		2009		2010		After 2011	Notes	
		4-6	7-12	1-6	7-12	1-6	7-12	1-6	7-12			
A-1	Strengthening of Trans-Kazakhstan Route											
	• Construction of Shalqar - Beynue		Examine in KTZ	Construction							F/S completed	
	• Improvement of Dostyk terminal		F/S	Construction				Operation				
	• Construction of Aktau Logistics Terminal		F/S	Construction				Operation				
	• Expansion of Aktau Sea Port		F/S	Construction						Opera	EU is now carrying out F/S	
A-2	Expansion of Block Train Operation			Implementation of operation								
	• Increase in Block Trains between Lianyungang/Urumqi and Almaty			Implementation of operation								
	• New Block Train between Lianyungang / Urumqi and Akatu / Astana		Examine in KTZ	Implementation of operation								
	• New Block Train line between Lianyungang / Urumqi and Moscow		Examine in KTZ	Implementation of Operation								
A-3	Strengthening of Marketing Functions		Implementation arrangement	Implementation and Operation								
A-4	Enhancement of Logistics Service Industry											
	• Contraction of multi-modal logistics terminal			Operation								
	• Enhancement of forwarders		Implementation arrangement	Operation								
A-5	Establishment of Logistics Information and Communication System		Implementation arrangement	Construction		Operation						
A-6	Customs System Improvement Simplification of Customs System		Implementation arrangement	Operation								
A-7	Enhancement of Regional and Industrial Development											
	• Special economic zone development		F/S	Implementation arrangement	Construction							
	• Akatu regional development		F/S	Implementation arrangement	Construction				Oper		Presently JICA is now conducting the study	
A-8	Human Resource and Institutional Development											
	• Establishment of Kazakhstan logistics research center		Implementation arrangement	Implementation								
	• Institutional Development		Implementation arrangement	Institutional improvement	Implementation							

Source: JICA Study Team

Figure 9.3-1 Proposed Action Plans

9.4 Priority Projects for Feasibility Study

The Study Team has made a comparative analysis in view of social conditions, natural conditions, economic conditions and marketing in Dostyk, Aktogay and Khorgos near the eastern border, and at Aktau and Kuryk near the western border, as suggested during the stay of the S/W mission. Survey points are mentioned as follows, giving the reason for the selection:

(1) Dostyk Terminal Station

Dostyk has been selected as a distribution terminal along the eastern border with China.

Reasons for choosing the Dostyk Terminal

- 1) This terminal is in need of urgent improvement, due to the fact that it is obviously accumulating cargos in trade with China.
- 2) It was also chosen through analysis of social and natural environmental conditions.

(2) Aktau Logistics Terminal

Aktau has been selected as a logistics terminal along the western border.

Reasons for choosing the Aktau Terminal

- 1) Aktau Terminal is located at a strategic point; in fact, this terminal is important as an access point from and to Kazakhstan, Europe, Iran, the Caucasus, etc.
- 2) The Mangystau Oblast Government has created a plan for developing a logistics terminal together with development of offshore production areas. The present terminal is one of the components in the plan.
- 3) It was also chosen through the analysis of social and natural environmental conditions.



Figure 9.4-1 Feasibility Study Location Map